[From Antonius Donatus ab Attomari: Omnia Opera, Lugduni, 1586]

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A NEW VIEW OF ELISHA NORTH AND HIS TREATISE ON SPOTTED FEVER

[BASED ON A RECENTLY DISCOVERED MANUSCRIPT]*

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IN that volume of charming essays and addresses by Sir William Osler entitled "Æquanimitas," within the chapter headed "Some Aspects of Medical Bibliography," where the author is speaking of early American medical texts, the following brief reference to the subject of my paper occurs: "Many early works of great importance are difficult to find, such as Elisha North on Spotted Typhus[1] or cerebrospinal fever, 1811."[2]

This remark about Doctor North and his well-known treatise had long ago fallen under my notice and had stimulated me to be on the alert, in my searches in second-hand bookstores, to find a copy of this rare medical classic.

It was somewhat disappointing, therefore, to learn from a Washington bookseller over a year ago that I had just missed a chance to acquire one. The circumstances were these:

The bookseller had proffered me a bundle of manuscript notes because of their apparent medical character, remarking that they had accompanied a book originally, with which they seemed intimately connected. Previous to my visit, however, the book had been sold, and only the notes remained.

A hasty but critical examination of the manuscript soon convinced me that I had stumbled upon material by Dr. Elisha North intended to be used in a second edition of his book on "Spotted Fever." It did not require any over-exercise of my powers of deduction to enable me to reach the conclusion that the book which had been previously associated with the notes was, in all probability, a copy of "Spotted Fever," Elisha North's *magnum opus,* and possibly a unique specimen.

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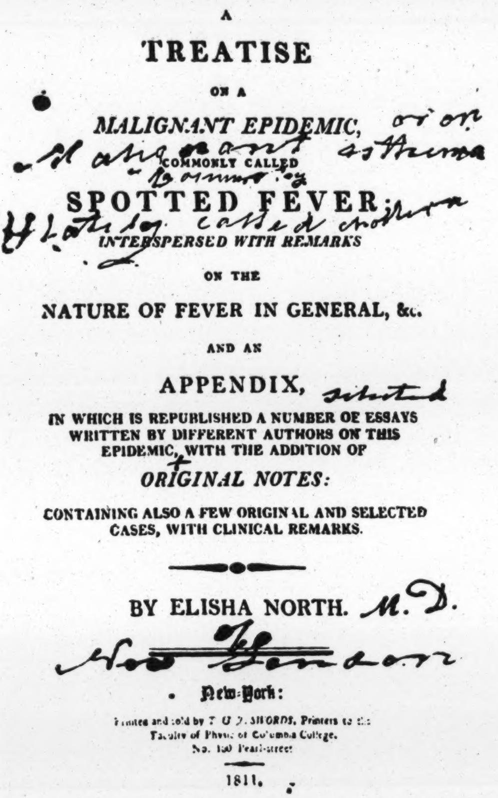
* Read before the Boston Medical History Club, March 17, 1924.

[1] A/ Treatise/ on a/ Malignant Epidemic/ commonly called/ Spotted Fever;/ interspersed with Remarks/ on the/ Nature of Fever in General, etc.; and an/ Appendix/ in which is republished a Number of Essays/ Written by Different Authors on this/ Epidemic, with the Addition of/ Original Notes;/ Containing also a Few Original and Selected/ Cases, with Clinical Remarks./ By Elisha North/ New York:/ Printed and sold by T. and F. Swords, Printers to the/ Faculty of Columbia College,/ No. 160 Pearl Street/ 1811./ 12mo, pp. xi, 249 [iii].

[2] Osler, Sir W. Æquanimitas, with Other Addresses to Medical Students, Nurses, and Practitioners of Medicine Ed. 2, with Three Additional Addresses. Phila., 1906.

It is always a satisfaction to learn who has gained the prize that one has missed, and in this instance it proved to be a visiting physician, who, fleeter of foot, and possibly less slender of purse than the resident doctor, had borne it off and gone on his way rejoicing.



A
TREATISE
ON A
MALIGNANT EPIDEMIC, or on
Malignant asthenia
COMMONLY CALLED
commonly
SPOTTED FEVER;
[illegible] called [illegible]
INTERSPERSED WITH REMARKS
ON THE
NATURE OF FEVER IN GENERAL, &c.
AND AN
APPENDIX, selected
IN WHICH IS REPUBLISHED A NUMBER OF ESSAYS
WRITTEN BY DIFFERENT AUTHORS ON THIS
EPIDEMIC, WITH THE ADDITION OF
ORIGINAL NOTES:
CONTAINING ALSO A FEW ORIGINAL AND SELECTED
CASES, WITH CLINICAL REMARKS.

BY ELISHA NORTH. M.D.
New London

New-York:
Printed and sold by T. & J. SWORDS, Printers to the
Faculty of Physic of Columbia College.
No. 160 Pearl-street.

1811.

FIG. 1. FACSIMILE REPRODUCTION OF THE TITLE PAGE OF DR. NORTH'S COPY OF "SPOTTED FEVER," WITH ANNOTATIONS IN HIS OWN HAND. (Courtesy of Dr. Benjamin Ide Hart of Bridgeport, Conn., the Present Owner.)

He had every reason to be pleased with his purchase, for, as it proved later, he had acquired Dr. North's own copy of "Spotted Fever," with numerous marginal notes in the doctor's crabbed handwriting.

However I felt that I had less cause for repining when I discovered that the book had fallen into the hands of a medical historian, and furthermore when I realized that he had been magnanimous enough to leave the manuscript for my subsequent inspection and acquisition.

The purchaser of the book was finally discovered to be Dr. Benjamin Ide Hart of Bridgeport, Connecticut, through whose kindness I have been able to examine it in connection with a study of the manuscript, which is evidently complementary to the volume, or the volume to the manuscript.

The manuscript has since passed from my hands and now has a more appropriate resting place in the collection of medical manuscripts belonging to Dr. Henry Barton Jacobs of Baltimore.

Would it not be of interest to learn how this manuscript and its accompanying volume happened to turn up in Washington, far from their original home in Connecticut? That question I shall advert to shortly, and endeavor to answer it.

The essence of my paper is drawn from the manuscript in question, the general character of which I wish to describe, and to show its relation to a proposed second edition[3] of "Spotted Fever." Before entering further upon my subject, it may be well to sketch briefly the main events of Dr. North's career and mention his conspicuous achievements.

The existence of two excellent biographical sketches of Elisha North relieves me of the necessity of presenting here more than the merest outline of his life. One of these biographies, that by his grandson, H. Carrington Bolton, PH.D.,[4] may not be quite as available as the other, by Walter R. Steiner, M.D.[5] I have to acknowledge my indebtedness to both these publications for much that is written in the following sketch.

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[3] Dr. Steiner in his article on Elisha North (*vide infra*) speaks of a projected second edition: "We very much regret he never published the second edition of this book, which he planned to print some thirty years later."

[4] Bolton, H. C. Life and Writings of Elisha North, by his Grandson. Read before the New London County Medical Association, April 7, 1887. Reprinted from the *Proc. Connect. M. Soc.*, III, 135, New Haven, 1887. Motto: "In Connecticut medical science has been cultivated with great diligence and the happiest results." James Thacher, M.D. Author's ed., 1887. (Pamphlet, p. 26.)

Elisha North was born in Goshen, Connecticut, in the year 1771. His ancestors were of English descent, who came to this country and settled in Connecticut in 1635.

Elisha's father, Joseph North, Jr., was a country doctor of the old school. The son followed in his father's footsteps and is said to have entered upon the practice of medicine at the early age of sixteen, when he set a broken bone successfully. After much experience in country practice as his father's assistant, in 1793 he went to Philadelphia and matriculated at the University of Pennsylvania. Here he pursued his medical studies under the distinguished Dr. Benjamin Rush and his colleagues, but did not remain long enough to obtain a diploma. Resuming practice in Goshen, he soon took a high rank in his profession and gained a well-deserved reputation for professional skill in the community.

Elisha North seems to have been a zealous student, striving always to keep abreast of advances in his profession, and showing an eagerness to adopt improvements which promised benefit to his patients.

Being of a progressive turn of mind he seized upon the results of Dr. Jenner's work in vaccination with great avidity and applied them successfully in his practice. He was the first in this country to report a human case of cowpox. Inoculation of material from this case produced vaccinia in another individual. Dr. North's interest in this subject and his association with Waterhouse and others in proclaiming the value of vaccination in the prevention of smallpox is a story by itself, too long to repeat here, but justly giving him an exalted standing in the ranks of those who early advocated the adoption of Jennerian theory and practice in this country. He was also one of the first physicians in the United States to make use of the clinical thermometer.

In the spring of 1805 a malignant epidemic disease, which we now know as cerebrospinal meningitis, appeared in Massachusetts, spreading to Connecticut the following spring. The disease had as one of its characteristics the presence of a maculate eruption, which caused it to receive the popular name "Spotted Fever." Dr. North sometimes called it typhus petechialis. The disease ravaged New England at various periods from 1806 to 1816. There were recrudescences in succeeding years up to 1830, and a second period of prevalence of the disease from 1837 to 1850. At first sweating and bleeding were much in vogue in its treatment but Dr. North at the very outset took a different course. He concluded "that death was not occasioned by violence of fever, inflammation, or putrefaction of the system, but by an unaccountable, sudden and violent

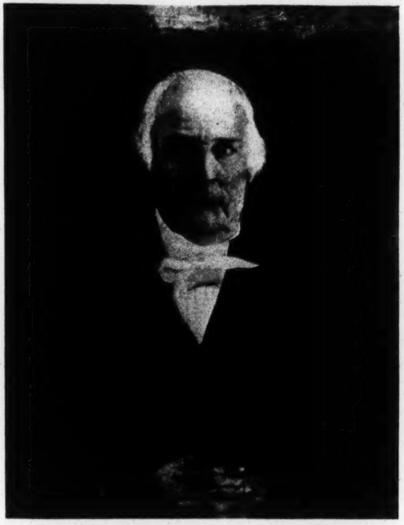

FIG. 2. ELISHA NORTH (1771–1843)
(Courtesy of Dr. Walter R. Steiner and *Johns Hopkins Hospital Bulletin.*)*

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[5] Steiner, W. R. Dr. Elisha North, One of Connecticut's Most Eminent Medical Practitioners. *Johns Hopkins Hosp. Bull.*, xix, ccxi, 301, 1908.

*The original painting is by Jared B. Flagg, and the Portrait is now in the possession of Mrs. Orrin Leslie Elliott of Stanford University, Calif. Mrs. Elliott is a great-granddaughter of Dr. North.

prostration of the energy of the brain and nervous system."[6] Accordingly he adopted a method of treatment quite the opposite to that in vogue, "stimulating to the fullest extent." Judged by the low mortality of the cases thus treated, his methods were remarkably successful. He claims to have lost but two patients out of two hundred under his care. Under other methods of treatment about one-third of those attacked died.

Many physicians adopted Doctor North's plan of treatment, some of their own accord, others in consequence of his publications, and with similar if not greater success.

The experience gained in this epidemic was the basis for the classic work by Dr. North which bore the title, "A Treatise on a Malignant Epidemic Commonly Called Spotted Fever." This book appeared as a small duodecimo volume in the year 1811. In it he assembled the contributions of other physicians, presented his own clinical observations and views and gave a number of case histories from his own practice. In the preface of this work he states that its object is "to preserve and bring into one view those things which have already been published," and adds: "This work was not written for amusement, but for utility; the author had a double purpose to accomplish, not only to exhibit the truth respecting the nature and treatment of this disease, but also to produce evidence of the truth."

Among the other historians of this disease was Vieusseux of Geneva (1805), Danielson and Mann of Medford, Massachusetts (1805), Nathan Strong, Jr., of Hartford (1810) and a committee of the Massachusetts Medical Society made up of James Jackson, Jr., J. C. Warren, and Thomas Welch (1810). An epidemic in Litchfield, Connecticut, in 1807 was described by Woodward, and by Bestor, Fiske, and Williamson in Baltimore in 1808.

In 1812 Dr. North moved from Goshen to New London. He continued the active practice of his profession, which now included not only medicine, midwifery and surgery but ophthalmology as well. In fact he is credited with opening the first eye infirmary in this country, and among his other inventions was an eye speculum.

Soon after assuming a residence in New London the War of 1812 broke out, and Dr. North volunteered his services and assisted in the care of the sick at Forts Trumbull and Griswold. He appears to have performed this service solely in his civilian status as no evidence of his having been appointed in the Army has been found. He took an active part in the work of the state and county medical societies and read papers before the county society in the years 1814, 1829 and 1834.

Dr. North lived to the ripe old age of seventy-three, active in his profession to the last. He died in December, 1843.

Knowing that those so inclined may find the whole story of Dr. North's career much better told in the excellent memoirs already mentioned, I have refrained from presenting a more detailed account and I realize that in this limited sketch I have omitted much that is of interest.

Just a few words, however, about Dr. North's other publications, because to mention them, if only by title, will indicate the wide scope of his interests and the variety of his talents. In 1829 he published a book entitled "The Outlines of the Science of Life."[7] This work is somewhat philosophical in character. Theories about vitality, the phenomena of vitality, and how it is formed and maintained, occupy a large portion of the book, but it abounds also in references to a multitude of other and diverse subjects. It is written in a discursive style, with many quaint conceits in its pages.

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[6] North, E. Spotted Fever, p. 99.

[7] Outlines/ of the/ Science of Life;/ which/ Treats Physiologically/ of both/ Body and Mind;/ Designed Only For/ Philosophers and Other Candid Persons/ To which are Added/ Essays on Other Subjects./ By Elisha North, M.D./ Of the Connecticut Medical Society, Honorary Member of Two Other Medical Associations, Conductor/ of An Eye Infirmary, Author of a Trea/tise on Spotted Fever, etc./ New York; Collins and Co. 117 Maiden Lane/ 1829./ (8vo, pp. xv, 202, xvii-xix (1). The signature, "H. Carrington Bolton, 1886," on title; a few pencil notes on margins, etc., by Mr. Bolton.)

Elisha North also wrote a book on the quasi-science of phrenology, which appeared in the year 1836 under the pseudonym of Uncle Toby, and the title of "The Pilgrim's Progress in Phrenology." This book was preceded, in 1835, by another work on the same subject, entitled "Five Essays on Phrenology," under the pseudonym of John Gilpin.

The title page of the first-mentioned work on phrenology carries one of those long descriptive subtitles so characteristic of books of the times. It reads as follows: "The Manly, yet Charitable Physiologist's Progress in Anthropology, or a Short Account of the Art of Making Nice and Useful Demarkations with Respect to Organical Differences."

Other articles appearing from the pen of Dr. North have these titles: "Observations on the Hydrocele Capitis Infantum," "Observations on Cynanche Trachealis," "On Extraction of Stone," "On Fuel," "The Rights of Anatomists Vindicated," and so forth. These are instanced solely to show his great versatility. A complete bibliography of his works is given in H. Carrington Bolton's memoir, where the following statement appears:[8]

> Thirty-five or forty years[9] after the treatise on spotted fever was published, Dr. North planned a second edition; the well worn copy which he used for the purpose is now in my hands; it bears his ms. notes on many pages, and contains more than sixty slips of paper on which are written the proposed changes and additions for the second edition which never saw the light.

This quotation clearly reveals the source of the manuscript notes and the book which were found in Washington. It also gives us a reason for their appearance in Washington, for apparently a member of the Bolton family has resided there in recent years.

Let us now consider the manuscript. This comprises sixty odd fragments ranging from the merest scrap of paper to sheets in folio size. Some of these carry writing on both sides of the paper and no order or system of arrangement prevails. They were all in a fragile and worn state, and to preserve them they have been covered on both sides with a fine silk mesh (chiffon or crêpeline) by the process used in the Library of Congress to preserve perishable manuscripts. The writing on each piece of paper has been deciphered, as far as practicable, for some words have defied interpretation, and typewritten transcripts prepared. An effort has been made to connect the individual notes with the text of the copy of "Spotted Fever" once belonging to Dr. North. This work was not fully completed, since it was found to be very difficult to find the lines in the text of the book to which a note referred, or of which it constituted an addition or a modification.

However, several of the more important changes embraced in the notes which Dr. North intended to utilize in the proposed second edition of "Spotted Fever" have been assigned their appropriate places in the text of the 1811 edition, and will be made the subject of comment later.

On one of the few folio-sized sheets of paper existing in the collection of manuscript notes, Dr. North has sketched the proposed title page for the new edition. A glance at this folio sheet reveals in an unmistakable manner a rather remarkable addition to the original reading of the text of the title page of the 1811 edition of "Spotted Fever." The following draft is a reproduction of the text of the original title page, the additions and modifications for the projected second edition appear within brackets and in italics:

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[8] Bolton, H. C. *Op. cit.*, p. 12.

[9] Dr. Bolton is in error here since Dr. North died in 1843, and the date of the first edition of his work was 1811.

A
Treatise on a Malignant
Epidemic
Commonly called Spotted Fever
[*or on*
Congestive Asthenia.
Formerly improperly called Spotted Fever and lately with less propriety named Asiatic Cholera.]
Interspersed with remarks, on the Nature of Fever in general, etc., and an Appendix.
In which is republished a number of [*selected*] essays, written by different authors in this epidemic [*regarding malignant cholera as a variety of the epidemic*] with the addition of Original Notes.
Containing also a few original and selected cases; with clinical remarks.
[*Second Edition.*]
[*To this edition of the book is added an Essay on Cerebral physiology with peculiar views of the science, and one on food, having reference to political economy; and to the relative wholesomeness of the various kinds of food.*]
By Elisha North, [M.D.]
[*Author of a Treatise on Vitality, etc.*]

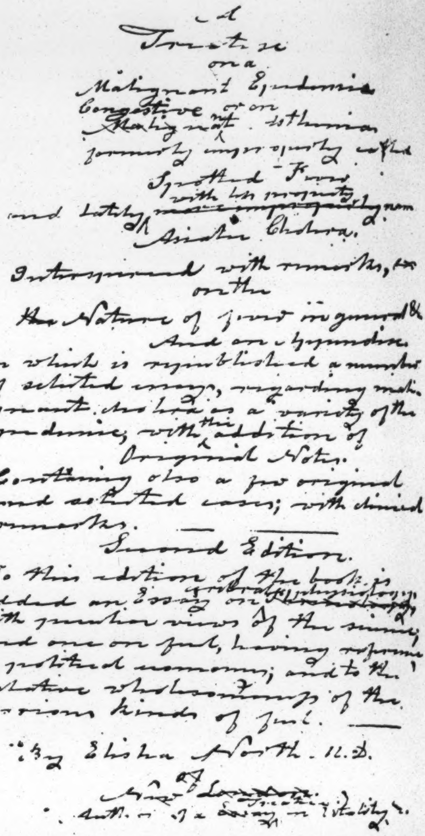

FIG. 3. FACSIMILE REPRODUCTION OF DR. NORTH'S DRAFT OF THE TITLE PAGE FOR A PROPOSED SECOND EDITION OF "SPOTTED FEVER."

Does not this proposed new title page adumbrate in the mind of Dr. North a new disease entity, which he now considers will embrace what was "formerly improperly called Spotted Fever and lately with less propriety Asiatic cholera"?

It would appear to be quite evident that it does, and that when he made this draft of a title page (*circa* 1841?) he had definitely concluded that the two diseases, cholera and "spotted fever," were types or varieties of a new disease complex which he proposed to call malignant (or congestive) asthenia.

While Dr. North's rather bizarre conception may possibly be regarded as a vagary of old age, for he was about seventy years old when he projected the second edition of his book, nevertheless a study of the balance of the manuscript will indicate, I think, that his treatment of other subjects reflects the same virility of mind which characterized the pages of his volume published in 1811, when he was forty years of age. But on this one point of the essential identity of two diseases which are quite dissimilar, he seems to have gone far adrift. Nor are the views expounded by him in relation to this new conception by any means either casual or accidental, for they are reiterated again and again both in the manuscript and in the volume which he used in connection with the proposed revision. In the latter, at many places, appear marginal emendations and additions of which the evident purpose is to make the text for the new book conform to his new theory. But let him speak for himself from the manuscript:

> In this edition, I propose to give such further information as my experience in the N[ew] L[ondon] spotted fever may enable me to do. And also to give my views . . . in regard to

> cholera and to show that they may with considerable propriety be regarded as one pestilence . . . the principle object of the book is to furnish my profession with medical testimony in regard to spotted fever in connection with malignant cholera.

Again in this extract which, incidentally, carries the notation "For the *Boston Medical and Surgical Journal*," he presents similar views:

> The cholera pestilential eddy, had been moving in the imaginations or opinions of man, from Asia, in a Western course, during 14 years, when it met that sturdy practitioner of medicine, Dr. N.[orth] at New London, in 1832. He at once determined to arrest, by the aid of his friends, its further highly injurious progress by showing that many of the opinions moving in that eddy were a literary delusion. This was to be accomplished by showing that cholera was only a somewhat new form, and yet not entirely so, of a pestilence with which we in this country have been somewhat familiar for 26 years past by the name of spotted fever.

To this paragraph, Dr. North adds: "I wish some friend to publish the above to prevent physicians writing and publishing on the wrong side of the question."

At this late day it will be difficult to arrive at a satisfactory explanation for the apparent state of confusion existing in Dr. North's mind over this question, but there are certain aspects of it which may be worthy of review and which may offer a measure of justification for his peculiar conclusions.

It will be recalled that Asiatic cholera, endemic for ages in India, broke its bounds and invaded Asia as a pandemic between 1816 and 1830, spreading also to Russia in the latter year, to northeastern Germany in 1831, reaching England in June of that year, and Calais in March, 1832, and finally invading America by way of Quebec and New York, in the same year.[10]

The "spotted fever" of Dr. North's time was epidemic from 1806 to 1816, with recrudescences up to 1830. Another period of prevalence dated from 1837.

From a study of these dates it is apparent that a period of prevalence of cholera followed closely upon one of cerebrospinal meningitis, and a period of prevalence of the latter disease followed the cholera epidemic of 1832. This concatenation of the two diseases, occurring in a period when the refinements of diagnosis which we now possess were lacking, when post-mortem examinations were few[11] and when medical men were swayed by allegiance to artificial systems of medicine which blinded them to the truth, may have had an important causal relation to Dr. North's apparently fallacious deductions.

If one could determine that aberrant types of both diseases prevailed in the epidemics under discussion with points of resemblance between the two, we might establish a reasonable basis for Dr. North's confusion and vindicate his previous well-established reputation for professional acumen.

It must be admitted that the epidemiology of cholera is very different from that of cerebrospinal fever and when, in addition, their symptomatology is considered, confusion of cases of the one disease with those of the other should seldom arise. But let us review briefly what might be termed exceptional conditions.

Cholera generally runs true to form, except in children, and with them, as with other diseases of the infectious group, bizarre symptoms arise. One of these symptoms is meningismus, and the presence of this condition in a patient might suggest the onset of cerebrospinal fever rather than cholera. On the other hand children at the outset of cerebrospinal fever often have vomiting, diarrhea, shock and abdominal pain, and a case presenting such a symptom complex might suggest that one had to do with a case of cholera.

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[10] Garrison, F. H. History of Medicine, ed. 3, Phila., 1921, p. 796.

[11] Dr. North in the manuscript makes only one reference to post-mortem examinations. He says: "Since . . . the first edition of this work, there has been no lack of dissection, especially in what has been called the cholera. These post-mortem examinations have shown few traces of true inflammation, in the brain or anywhere else. They only manifest that there has been congestion in various parts, owing to torpor or sedation in those parts."

Sir Humphry Rolleston in his Lumleian lectures on cerebrospinal fever, which he delivered in 1919, spoke of a type of this disease with severe haemic infection which is accompanied by shock, vomiting, abdominal pain and diarrhea. Such cases of course might for a time simulate cases of cholera.

Dr. North himself, in the 1811 edition of his book on spotted fever, refers in several places to cases which he terms the cholera morbus type of the disease. Could the occasional occurrence of such cases and of others like those just described have confused his judgment sufficiently to account for the extreme views which possessed him later? That question is in the main still unanswered, and the mystery must, I fear, remain unsolved.

It will be noted also on consulting the new title page that Dr. North purposed as an addition to this issue of his book "An Essay on Cerebral Physiology," which, in the light of the publications on phrenology already mentioned is probably only another name for phrenology.

Finally in the title page for this edition of the work, it will be observed that he adds "M.D." to his name. When the 1811 edition was published this title did not appear. In 1813, the State Medical Society at a meeting held in New Haven on October 20th voted to confer on him the honorary degree of doctor of medicine. Hence the addition to the new title page.

Dr. North in the manuscript makes a definite reference to the danger of infection from contamination with the rice water discharges of cholera but when he endeavors to outline the pathology of this condition his views are perhaps less prophetic:

> The reader . . . will perceive . . . that it was thus known that morbid discharges were fraught with imminent danger. It was not known . . . however that the chyle or fluid part of the blood could run through a torpid and partly inverted organization, per anum, in the form of rice water evacuations, as is now the case in cholera.

Referring to the sequence of events in a case of cholera, he states:

> Torpor or sedation in the chylopoietic viscera and inversion of the lacteals, occasioning first either diarrhoea, and then true cholera, or watery discharges; and lastly universal torpor ending in death.

It appears that he is a proponent of the theory that fear and mental emotions may, in association with other causes, give rise to the disease:

> In regard to those sceptical physicians who . . . ridicule the opinion that dangerous cholera can be propagated by mental emotions I have only to say that my experience has satisfied me that spotted fever can be propagated in that manner; and that I am fully persuaded that thousands of persons have died on this globe with cholera, from that remote cause when made to act in addition to other remote and more immediate causes. Many non-professional persons are aware that they should not read medical books too much lest they may generate or occasion the complaints about which they read . . .
>
> From Mr. Babcock's remarks,[12] the reader will perceive, that spotted fever like cholera, may occasion a pestilential panic. He will likewise perceive, that the physicians of those times (1808–1810) did not labour under that malady called by Mr. Addison the Itch of Writing, like those of the present era [1841]. Hence more confidence may be placed in the facts published by them than otherwise would be the case.

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[12] Mr. Babcock was the editor of a newspaper in Hartford. His remarks on "spotted fever" appear in Chapter xv of Dr. North's book. Mr. Babcock complains, "that the physicians of Connecticut have been too long silent on a subject deeply interesting to the community" and urges them to follow the example of the Massachusetts Committee appointed in 1810 to study the epidemic of "spotted fever." Dr. North's gentle touch of irony in the second sentence of the paragraph *supra* is thus explained.

In many respects however, in medical practice, Dr. North was far in advance of his time. Even in his earlier works he preached and practiced moderation in venesection; led the revolt against over-dosage with mercury and voiced his appreciation of the value of good nursing and other general measures in the treatment of disease. His forwardness in adopting vaccination against smallpox has already been mentioned. Some of his views on treatment and his animadversions on the institutional care of cholera appear in the following:

> The human organization may with great rapidity [from certain causes], lose its vital elements and this loss may occasion first torpor or sedation, and then even death. Some of the hurtful causes alluded to are excessive cold or heat, excessive fatigue of either body or mind, the passions, when not properly controlled, injuries from venomous insects or other wounds, or from intemperance, or too long indulged starvation, or too much abstinence. The pleasures and pains of our organization even when moderate wear us out in a few years, and we die from old age. If these pleasures or pains be highly excessive they may either of them kill us suddenly . . . And if the natural reaction of our organization be not sufficient, then the comfortable recumbent posture in a warm bed, where our organization may be or should be supplied with a plenty of such comforting agents as caloric, oxygen, rest, cheering hope, exciting or vivifying internal anodyne agents, etc., until relief be had. Our women, as well as physicians, are daily doing much good in these ways, however humiliating it may be to the science of the morbid anatomist.
>
> Now I beg the reader to look into a cholera hospital and then see whether these highly important salutary agents are at all cheerfully, plentifully and skillfully, *seasonably* brought into use, *upon each unfortunate patient,* who may be crowded, into a very small space, to be dangerously annoyed by the dead and the dying that are near him, and to be a subject for the improvement of a succession of young physicians.
>
> I might be willing to avail myself of a public hospital, for a wounded limb or a chronic illness, although I should much prefer my chance for life in a lonely garret or a dry cellar, if I had dreadful cholera, even if I could command no more assistance than a single benevolent female under the direction of a humane and skillful physician.

In his "Index of the things that should be known respecting cholera," is the statement: "Quarantine worse than useless."

TREATMENT [OF CHOLERA]

> A supporting, tonic, stimulating, diaphoretic treatment, taking care to remove obstacles which may be in the way to prevent the best effects of such treatment, has been found very successful, in all forms of epidemic malignant asthenia, except that of Mors Epidemica [the severe type of cholera], if we credit the testimony of the most experienced physicians in Europe and in this country since 1806, having reference to cholera and spotted fever.

In another part of the manuscript where the same subject is dealt with, the context is somewhat obscure but Dr. North makes mention of Morton, Sydenham and Dr. John Brown of Edinburgh, the founder of the notorious Brunonian theory:

> The latter person [i.e. Sydenham] however mistook the true nature of malignant asthenia. This fact was known to Dr. John Brown, although not to many others . . .
>
> In regard to the utility of ice boluses, in the collapsed and cholera form of our malady, I shall content myself simply with asking the subsequent question. Can the caloric needed to liquify such ice when on its way to the stomach, be drawn off or find its way gradually, by affinity or otherwise, through our half dead or loose organization, from the hot things usually put near the surface of the patient, at such times?[13] And if so may not more caloric be thus forced or got into our diseased organization than otherwise would be the case? If so the good which is said to be the result from such German and French practice may be explained. The human organization somewhat like the metals and water is a conductor of heat. . . .
>
> Another reason why more minute instruction is not given for the management of individual cases [of cholera] is this. It is a sort of art which

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[13] Caloric penetrates a metallic vessel when we melt ice over a fire.

> can only be acquired by much clinical practice among the sick. It cannot be taught well by books. Nor can personal judgment be given in that way. . . .
>
> I have never published the sentiment that a high stimulating practice would cure the worst cases of collapsed cholera. These I regard as mors epidemica; and the whole history of the disease shows such a moribund state to be incurable. Our efforts should be made to prevent such a state because we can often do this. This statement is made in reference to a published statement, from a very respectable source, namely Dr. Ware of Boston. . . .
>
> Dr. Ware of Boston has stated, in a good essay, on Cholera, which has been somewhat extensively published that the highly stimulating plan of treatment of Dr. Mind and Dr. North had been tried in cholera in N. Y. and had not succeeded very well; as he was told. With respect to Dr. Mind's plan, for his plan and mine are not precisely the same, I have nothing to say, because he is abundantly able to protect himself. As respects my own diaphoretic plan of treatment, or rather that of Mrs. Hurlbert, I am fully satisfied that at the time, when Dr. Ware was in N. Y. it had not, in any measure, been fairly tried in cholera, at any rate, in any public way. I have never said however that I believed that it would always cure the worst cases of collapsed cholera.

In the following comment he animadverts on how New York has dealt with the cholera:

> It is scarcely expedient to try to do better than well in the management of a sudden and mortal epidemic, having reference to all concerned. By thus trying to do [so] New York have [has] done probably worse than almost any other place. They had the whole world to teach them how to do, previous to their epidemic, and yet there has been no harmony among them. They have been confounded by too much instruction, some of it being correct and much of it that was not so. While trying all plans, they neglected the one which might have been tolerably good, viz., the New England one. This last was adopted in N. London [by Dr. North].

Here are his views on the subject of venesection:

> I may have a prejudice in regard to venesection. When I amputate a limb I always feel as though I had done an injury to my patient by the mutilation, not capable of being repaired. So likewise when I remove a part of his blood, although a fluid, I have done that which is often with difficulty renovated. The patient may, however, often receive a present advantage from both these operations, although a lasting injury may be the consequence. That our organization is injured and our lives shortened by a frequent loss of the blood there is no doubt. See Dr. Marshall Hall on the abuse of blood-letting. . . .
>
> Easing pain and distress by venesection does not always prove a remedy to be well calculated to cure a disease. I do not however pretend to be able to ascertain what exceptions to general rule against venesection there may be in its favor, in cholera. These exceptions may be different in various countries or locations. Hence there is a difficulty in relying too much upon information to be had from books written in different climates, even if they be written by practical and judicious men. . . .
>
> In cholera cases injurious matters may need to be evacuated, taking care to support or protect the organization of the patient at the same time. Does the blood now become suddenly so deteriorated as to be poisonous to its own vessels in such cases? And if so can the poisonous matter as the case may be, be removed by venesection? If not, why evacuate so vital and needful a fluid, unless the patient had too much of it just before he was taken sick? This is not generally the case in cholera or in petechial fever patients; although this plethora may have had an existence in true sthenic cases of inflammation, and may have been one cause of such inflammation.

He concedes the value of bleeding in an unqualified manner in only one condition, namely, "quasi sthenic intermittent" but "damns it with faint praise" in connection with the treatment of cholera:

> To make the system more susceptible to the operation of the bark in such cases venesection has occasionally been found useful. In like manner in cholera, in hale European soldiers in the East Indies, venesection, if it does not kill the patient, may facilitate the operation

of other approved remedies. In this country and in Europe and upon the natives of Hindustan venesection has oftener in all probability done [more] mischief than good in cholera. It should therefore be used by the inexperienced with great circumspection wherever it may be tried.

With respect to the use and abuse of calomel he voices the following sentiments:

> A physician said to me years ago, that I ought to be ashamed of what I published, in the first edition of this work, in regard to mercury. With the permission of persons whose heads may be organized somewhat like the person alluded to, I will now state that during more than forty years practice, I have known the organization of so many persons permanently injured by the abuse of that highly fashionable medicine, that I think now as I then did, that cautions in regard to its abuse are highly proper. . . .
>
> Calomel may be used or neglected in the treatment of both cholera and spotted fever, according to the judgment of the physician. It may be used with a view to its tranquilized, stimulating, and purgative effects upon the first passages. It is not proved that mercurializing the system is particularly useful in either of these forms of complaints. There is more evidence in favor of mercurializing the system in that summer epidemic of the warm climates called yellow fever than is the case in this epidemic which is one of all climates and seasons. Mercury is more useful in warm climates than in cooler ones.

Scattered throughout the manuscript are various comments on vaccination and smallpox, and while few if any of them bear directly on the subjects under discussion, they are of interest because they give a reflection of Dr. North's activities in this field. Some of these references have been assembled in what follows:

> The opinion of Dr. North of this city, published thirty years ago, in favor of the identity, or quasi-identity, of small-pox and cowpox is recently verified in Britain by Dr. [Robert] Ceeley [of Aylesbury, England]. See Dr. C's Publication, or a good review of it, and, likewise a note, in Dr. N's treatise on the spotted fever. The skillful can now obtain, when wanted, vaccine matter of the best quality, by inoculating a young cow with the genuine small-pox. Proper instruction can likewise be easily had coming from Dr. Ceeley's highly useful publication. We, ourselves, have paid some attention to this interesting medical subject.
>
> An extract from a discussion had in the *Chiron Gazette* (S. C.) and in the *People's Advocate,* New London, Dr. Jenner discovered the utility of vaccination. While it must in the future be unquestionably admitted that the combined investigations of Dr. North of New London and Dr. Ceeley in England, have established the identity of the vaccine prophylactic with the smallpox.
>
> The view of Dr. MacLean, Editor of the *Chiron Gazette,* is a mistaken one. He regards the cow's smallpox and man's smallpox as like father and son only, whereas they are identical. This is proved in two logical modes. First Dr. North arrived at such an opinion by the process of the brain called comparison, and second Dr. Ceeley by that of induction. Each sustains the other. Of course there can be no mistake in the premises. Some for the sake of contention may deny that Dr. N. gave such an opinion as is attributed to him, because of his modestly or cautiously used language in the question form. It is known that the doctor never advised revaccination because he believed in the identity of both maladies under discussion. Again, suppose the same bullet from a gun be passed through the organization of a man, a cow, and a horse, would anyone contend that the mischief done did not proceed from an identical cause? If the cause be identical the disease must [be] so.

Toward the end of one of the notes in the manuscript the doctor states, with what is evidently some degree of restraint, "I will not trouble the reader now with my physiological or metaphysical views in regard to body and mind." But that he cannot refrain from doing so for long, we shall see from the following observations, not all of which are characterized either by coherency or clarity:

> But I will observe, that this world is somewhat imperfect, taken either in a medical or moral view of the case, and that all a medical

or philosophical author, however powerful he may be, can reasonably expect to accomplish is to better in some small degree this imperfect state of affairs. The distinction which society chooses to make between moral and medical affairs is attended with at least one evil. Body and mind act and react upon each other, and mind upon mind. There are two sets of teachers employed by society in regard to these actions and reactions, and these teachers often take even opposite views, on many moral subjects especially. Now both these views cannot be right or natural. The teachers alluded to are medical men and clergymen. To these last many a philosophical writer would teach natural views, because these are the best, if he could. But many teachers of the last description will not read such productions. Or, if they do, they or some of them, will be so selfish, as to disapprove of many highly salutary natural truths, because their own consequence may be injured by those truths, in their view of the case. In their view they are, however, often mistaken. Individuals, however, in justification, may say, and with some truth, that they are not independent, like medical men, of the order to which they belong and must teach in some measure in such manner as they may be directed to do. . . .

Reasonable utility, having reference to the natural structure of the human brain ought to be the substantial basis for religion and morals. This rational utility may vary, however, somewhat among different classes of people. . .

Soulness, motiveness, or usefulness, agreeableness.

To give a faculty to perceive the motions of mind by study, for the sake of beneficial results. It may be a general faculty of soul without any specific organ for the purpose. To help make oneself fascinating to others, when more substantial qualities may be deficient. This faculty may enable authors to charm readers, like [Laurence] Sterne, and some woman to charm the opposite sex like Mrs. ———, and serpents to fascinate birds. . . .

Political distinction varies like the shadow on the [sun] dial. It has its ebb and low tides. This must be painful to uniform characters.

Dr. North's admiration of and loyalty toward the medical profession found expression in his plan of naming his children after prominent medical men. The eldest son was named Erasmus Darwin,[14] another William Harvey and still another William Heberden. With this knowledge before us, we can understand the intensity of feeling evidenced in the following extract from one of the manuscript notes:

> I have often heard it said that the sentiments of Dr. Darwin, and of others like him, were detestable. Now what does so harsh an expression prove? It manifests that the person who expresses it is too proud and bigoted to be pleased with the honest simplicity of Dr. Darwin, and others of similar character.

There are several references in these manuscript notes by Dr. North to his own book on "Spotted Fever," and it will be instructive to learn in what esteem he held this, his chief work. In speaking of the Preface, he says: "A bigoted person once told me that this preface was extremely faulty; if it be so my brain is so organized that I cannot perceive it." And I may add that the preface is the one section of the book which has undergone no amendment or modification.

Another note relating to the book is as follows:

> It is proposed to make honorable mention in the book of the names of the persons who may be generous enough to patronize its publication. This is no more than an act of justice, especially at a time when the public may be too much annoyed with subscription solicitations. . . .

[14] It was Erasmus Darwin who, in his "Economy of Vegetation" (1792) foretold the invention of the steam locomotive, the flying machine, and the use of the latter in aerial warfare:

> So shall thy arm, unconquer'd Steam, afar
> Drag the slow barge, or drive the rapid car;
> Or on wide-waving wings expanded bear
> The flying chariot through the fields of air,
> Fair crews triumphant, leaning from above,
> Shall wave their fluttering kerchiefs as they move;
> Or warrior bands alarm the gaping crowd
> And armies shrink beneath the shading cloud.

Darwin, Erasmus. The Botanic Garden, a Poem, in two parts. Part I containing The Economy of Vegetation, part II The Loves of the Plants, with Philosophical Notes. Ed. 4, London, 1799. This quotation is to be found in part I, p. 34.

> Physicians like other people are liable to become hallucinated so as not to view things through a natural medium; this makes more medical testimony needed to establish medical facts, than otherwise would be wanted. This must be my excuse for so large a book.

Finally the following modest [*sic*] estimates of his own work appear:

> I fear the preceding book is made too perfect. If so it will not be attacked often enough to keep it in remembrance. Many a good medical book is too soon forgotten, or never gets into much notoriety from that cause, and is superseded by others, less valuable. I have published a book containing many important and some *new* physiological and other truisms which is [are] not yet much known or read. . . .
>
> We are highly satisfied, that each person who will be a subscriber for his [Dr. North's] book, will do a patriotic act to his country and one that will in high probability subserve the cause of humanity among the sick and others.

Perhaps I have now presented quite enough in the way of examples from Dr. North's manuscript to reveal a few of its outstanding characteristics. Limitation of space prevents a more complete exposition of its contents. Much that is expressed therein in relation to medical doctrine is sound, even according to present day standards, but much also is unsound. A candid view will hardly enable one to subscribe unreservedly to the regret expressed by the writer of one of the memoirs that the second edition of Dr. North's book was never published. That writer, however, had no opportunity to study the manuscript notes upon which a second edition of the book was to be erected. At the date of his paper this material had not come to light, and was still in the hands of Dr. North's descendants.

If we are warranted in making any deduction from a study of this manuscript from the pen of Dr. North, perhaps we can find in it grounds for confirming the truth of that utterance by a master mind in medicine some years ago (Feb. 22, 1905), perversely interpreted in the public press, which runs as follows: "that the real work of life is done before the fortieth year and that after the sixtieth year it would be best for the world and best for themselves if men rested from their labours."[15]

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[15] Osler, Sir William.

Cum INDICE *locupletiſsimo.*

[From Franciscus Vallesius Hippocrates, Coloniae, 1589]

SEMMELWEIS, AN INTERPRETATION[*]

By PERCY M. DAWSON

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INTRODUCTION

"HISTORY is the story of the follies, misfortunes and vices of mankind." This statement is made by no less a person than Edward Gibbon, the author of that immortal book, "The History of the Decline and Fall of the Roman Empire." I call it immortal because although the last three volumes of the work appeared one hundred and thirty years ago (1788) it still holds the minds of men. It is still more sought after than any other great work of history which has been written in or translated into English. Asserted as it is by the author of one of our greatest classics, we are compelled to give Gibbon's pronouncement some consideration and to ask ourselves, is the dominant chord in history always a minor? Is the human drama always a tragedy or at best a farce?

If in seeking an answer to this question, we begin by inquiring what Gibbon meant by history, we perceive that it was essentially the sequence of events in the political, social and moral realm. Here at once we feel constrained to admit that when we attribute moral progress to mankind during historic times, we are advancing a debatable proposition, and furthermore, since it is probably quite impossible to dissociate the political and social from the moral ingredients in history and to show that all do not stand or fall together, we feel that perhaps Gibbon's pessimism may well have had some element of justification. A closer scrutiny reveals to us that Gibbon's golden age lay in the reigns of the Antonines since which, he was convinced, Europe had suffered from an increasing decay. In the realm chosen by Gibbon one feels at times that our pessimism or optimism is dictated solely by our temperament or bias. In any case we are willing to acknowledge that critical scholarship in this field demands an amount of knowledge and acumen and a degree of objectivity which is possessed by only the rarest intelligence, and that the raw material demands for its reasonably correct evaluation the profundity of the philosopher.

It is a matter of congratulation that our interests lie for the most part outside of the realm cultivated by Gibbon and that our field is largely independent of his, or at least may be so considered by us with some justification if not with perfect truthfulness. Our interests as scientists are largely concerned with our technique of control over nature, with knowledge so real as to render mankind increasingly powerful. In this field human progress is indisputable.

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[*] Read before the Seminar for Medical History, University of Wisconsin.

NOTE. In presenting the life and work of Semmelweis[†] to the readers of the ANNALS OF MEDICAL HISTORY, the writer is aware that he is offering no new facts. The task which he has chosen is not that of the historian, but rather that of the interpreter. The present article is the fruit not so much of investigation as of experience, not so much of knowledge of the actors in this particular drama as of mankind in general. We were told that when the late professor Masaryk became president of Czecho-Slovakia, he turned for inspiration to the great novelists. In accord with this mode of procedure, be it said that the writer of the following story relies more on his knowledge of Dickens and Dostoyevsky than upon a perusal of the writings even of Semmelweis himself. He has recalled those fruitful conceptions of Frenssen and of Kipling, "Heim Heiderieter" and "Puck of Pook's Hill," and under their inspiration, he also has sought to recall an epoch which has passed and to make it live again. But whether or not his efforts have been successful must be left to the reader to decide.

[†] To those for whom the German language offers difficulties the monumental monograph of Sir William J. Sinclair entitled "Semmelweis, His Life and Doctrine" (Manchester University Press, 1909) cannot be too highly recommended as a mine of information. This book has been of inestimable service in the writing of the present paper both in directing the attention of the writer to the original sources, when the latter were available, and in affording copious quotations, when such sources were difficult of access.

We may excuse Gibbon for his leaning toward the state as administered by Marcus Aurelius, but to regret the passing of the medical science of Galen is unthinkable. There is of course always the strong temptation for us to ask *cui bono?* These are magic words and will convert us at once into philosophers and change our field from one of facts to one of values. But we do not intend to ask *cui bono!* We are determined not to be enticed away from our chosen task even by the call of problems more fundamental and no less alluring. Let us not, however, delude ourselves with thinking that what we purposely neglect has ceased to exist. The political, social and ethical world is still there. It will intrude of course, it will facilitate or oppose the progress we are studying, but it is, for the time being at least, not the world of our adoption and solicitude, the world where progress is undeniable.

In the selection of a character to form a suitable nucleus for this sketch I have been influenced by a request made long ago by Professor Miller. He has chosen Ignaz Phillip Semmelweis and I shall introduce him to you. But it is a somber page in history that I will have to present. For against a background of scientific superstition, of professional vanity and intolerance, and of political violence and futility, I am to call your attention to an earnest, perhaps brilliant but unfortunate and often very unhappy man, and we shall see again that it is not only the city of Jerusalem that has been addicted to stoning its prophets.

CURRENT OPINION

At the time of Semmelweis and in the generation which preceded him, medical opinion regarding puerperal fever was most diverse and perplexing. A medical writer who professed to describe the discussion at the French Academy in 1858, stated in language more witty than exact, and yet more truthful than either, the following:

> Among the academicians whom we have heard, we can count essentialists, non-essentialists, essentialists against their will, essentialists without their knowledge, absolute localizers, half and quarter localizers, localizers with a leaning toward essentialism, and essentialists with a love of localization, specificists, typhists, traumaticists, and neo-traumatists.

He might have added miasmatists, and epidemicists of half a dozen degrees.

To say that there were two chief theories, the theory of contagion and the theory of the *genus epidemicus*, and to add that to the former belonged the characteristic of remediableness while to the latter belonged that of irremediableness would be to simplify the situation beyond recognition because each theory was represented by endless variations some of which it would be difficult to assign to either group, and because all degrees of remediableness are to be encountered. Now I do not propose to spend my time and yours in an attempt to analyze and classify old errors. But having convinced you of the inadequacy of the classification into contagious-remediable theories and epidemic-irremediable theories, I shall proceed to use this classification boldly, nay brazenly!

The theory of the epidemic origin of puerperal fever had for its headquarters France and Germany. According to this view the essential factor was a certain *genius epidemicus*, an atmospheric-cosmic-telluric influence. Thus Kiwisch, professor of obstetrics at Würzberg, wrote of an epidemic which had occurred during his service and in which the mortality had reached twenty-six per cent, that the reason for this sudden outburst could be sought for only in atmospheric conditions. There had been, he said, repeated outbreaks and these "always coincided with changes in the weather." All precautions were in vain "until suddenly in the month of July, without any change in the conditions within the hospital, the health of the patients returned to its ordinary satisfactory state."

When Kiwisch died about 1853 he was succeeded by Scanzoni who, while he was still an assistant of Jungmann in Prague, had shown himself an ardent epidemicist and in 1846 had written as follows:

> The *conditio sine qua non* is the fibrinous crasis of the blood, which, when it rises to a high degree, represents the immediate cause of the disease, and consequently the essential element in the ordinary puerperal fever. It originates under influences of a cosmic, telluric character.

Again, when in 1858 the French Academy devoted a series of sessions to a consideration of the etiology and nature of puerperal fever, an incident already mentioned, Danyau, assistant surgeon at the Maternité in Paris, said in the course of his address: "For me puerperal fever is a malady of miasmatic origin."

Now the great indictment of these views is that they paralyzed effort for no one felt either responsible for those atmospheric-cosmic-telluric-miasmatic influences or capable of coping with them, and those, whose hearts bled for the women who groaned in travail only to die during the puerperium, were naturally in despair over the situation. Thus Tarnier, the brilliant young assistant at the Maternité, tells of his feelings in the following words:

> I made inquiries of my masters at the Maternité, Dubois, Danyau, Delpech. I said to them that it appeared to me impossible that such a mortality could be general, and that it could prevail equally in private practice. They assured me that the same condition of things prevailed in the city, and that the epidemic was then as severe as in the hospital. "That has always been the case," they said, "and it will be always so." The fatalism of such an answer was revolting.

In passing let me mention two parallel situations, one biological, one theological. The first is the relation of the vitalism of the last part of the eighteenth and the first part of the nineteenth century to mechanistic theory and scientific progress. The second is the relation of supernaturalism of the nineteenth century to the pragmatism of the twentieth and to social adaptation. Those interested can readily pursue these illuminating analogies further.

The land of the epidemicists lay in complete shadow while the British Isles were bathed in a vigorous twilight, for there a theory prevailed which was hope-inspiring and which was leading to a great amelioration of the lot of the parturient. This theory, the theory of contagion, in its earlier and cruder form was expressed in 1795 by Gordon of Aberdeen in the following words: "I had evident proofs that every person who had been with the patient in the puerperal fever became charged with an atmosphere of infection which was communicated to every pregnant woman who happened to come within its sphere. This is not an assertion but a fact." Puerperal fever is "a special contagion or infection altogether unconnected with the noxious state of the atmosphere."

Turning from Scotland to Ireland we find another contagionist as master of the Dublin Lying-in Hospital from 1814 to 1821. At this point let me inject the explanation that those physicians, who were contagionists, still used the term "epidemic," but with them it signified not a state initiated by a hypothetical influence, but an unusual number of coincident cases of the disease in question. The master of this Dublin hospital was Labatt, who in his report to the board of governors of the hospital states that the epidemic in 1818 was due to the prevalence of "typhus" fever in the city. Patients were ill on admission and consequently succumbed easily to puerperal fever. They had made a great effort to stamp out the disease; they had isolated the sick; changed frequently the beds and bedding; changed the furniture and utensils, scoured with chloride of lime; fumigated with chlorine gas; painted and white-washed; impressed upon the nurses and servants the need of cleanliness and ventilation. These efforts were in part successful. The mortality fell from 6 to 2.5 per cent and Labatt felt justified through his experiences in concluding: (1) that contagion of "typhus" fever is capable of giving rise to puerperal fever; (2) that puerperal fever is communicable from one patient to another; (3) that it can be carried from the sick by an attendant to healthy lying-in women.

In 1841 Storrs of Sheffield from observations on his own cases and evidence collected from his friends came to the conclusions: (1) that puerperal fever may be communicated by touch; (2) that it originates in some animal poison especially from erysipelas and its complications and in a less degree from "typhus" fever. He therefore drew up the following rules for the obstetrician: (1) to avoid treating cases of erysipelas; (2) avoid post-mortem examinations or if either or both of these procedures are unavoidable, then the practitioner should use disinfectants and change his clothes.

These examples show how different was the point of view which prevailed in Great Britain and Ireland from that which afflicted the Continent for although it is not to be supposed that all the insular members of the medical profession shared the advanced ideas of Labatt, Gordon, Storrs, and the eccentric James Copland (1791–1870), yet these men had no analogues on the Continent except the few, who were conscious imitators of English methods and were ready to admit English influence.

If one were to demand why there should exist these remarkable differences in two such closely related parts of the world, the reply would be that England had not experienced warfare since the revolution of 1688, whereas the Continent while still suffering from the frightful carnage of the Thirty Years' War (1618–48), was further devastated by the War in the Palatinate (1689–97), the War of the Spanish Succession (1701–14), the War of the Austrian Succession (1741–48), the Seven Years' War (1756–63) and finally the Napoleonic Wars, not to mention those of lesser note.

To almost perpetual warfare some historians would add a second factor. They would call attention to the fact that obstetrical practice in England was largely in the hands of the physicians while on the Continent it was controlled by the midwives. But it is quite conceivable that this latter circumstance is merely secondary to warfare and not a factor coordinate with it, for warfare would naturally preoccupy many men who were or might have been members of the medical profession and thus of necessity relegate obstetrical practice to the midwives. However this may be, the fact remains that the midwives dominated on the Continent and the physicians in England, with interesting results to these two classes of persons and to the science and art of obstetrics.

In England where the physicians dominated, the midwife was degraded until we find her pointed at with scorn and ridicule in the person of Sarah Gamp. On the Continent where the midwife dominated we see a type of woman far superior to her English colleague. Indeed the professional descendants of Louise Bourgeois, who attended Maria de'Medici in her six confinements, and of Justine Siegemundin, court midwife to the Electorate of Brandenburg, who scandalized the learned world by writing an obstetrical treatise in German in 1690, retained much of the honor and responsibility of their professional forebears, and at the Maternité at least, performed dissections as a part of their technical training. The physician on the other hand played a very secondary rôle. His function seems mainly to have been that of performing destructive operations whenever the midwives felt that surgical interference was called for.

With regard to the progress of obstetrics, it may be said that knowledge of the subject was appallingly scanty on the Continent among both midwives and physicians. The latter lacked practical experience; the former, cut off from the stimulus and inspiration of general medical education and indeed from education of any sort, were, not unnaturally, hopelessly unprogressive, and it was not until the trained physicians came to the fore that the Continent began slowly to overtake her insular neighbor.

These generalities, however, are not so impressive as a few facts and dates, such as the following. In the seventeenth century an enterprising physician who attended in disguise a case of labor was burned at the stake in Hamburg. Not until 1751 when Johann Georg Roederer of Göttingen began to instruct medical students in midwifery had such a procedure been known in Germany. Vienna followed this lead in 1754. But there was no students' clinic in Berlin until 1817, sixty-six years after the establishment in that city of the clinic for midwives. In Paris matters were still worse so that when Boër arrived there in 1788 with a special commission from Joseph II of Austria he was admitted to the Maternité only through the efforts of the Emperor's sister, Queen Marie Antionette.

With this situation on the Continent we may compare the complete subjection of the English midwives when William Smellie (1697–1763) in the first half of the eighteenth century fought once for all the battle of the obstetricians. Although dubbed by the Haymarket midwife, Mrs. Nihell, "a great horse god-mother of a he-midwife" he overcame the opposition of the "pudendists" and their allies and founded a school of obstetricians of which William Hunter and John Harvie were conspicuous representatives and to which Boër's predecessor, Crantz, made a pilgrimage in the days of Maria Theresa.[1]

So much for Europe in general. Let us now direct our attention to that part of it which is to be the scene of one of the most brilliant and important discoveries in medicine of the first half of the nineteenth century.

THE VIENNA HOSPITAL

After the close of the Seven Years' War (1756–63), Maria Theresa found herself able to devote her energies to the welfare of her subjects and with this end in view she established the lying-in hospitals of Vienna and Milan. She moreover sent Crantz on a pilgrimage to the obstetrical shrines of Paris and London to bring home such inspiration as these centers could afford. Crantz came into contact with André Levret (1703–80) in Paris and with Smellie (1697–1763) in London, and from the latter acquired the art and habit of instrumental delivery. His tour completed, he returned to Vienna where he effected among the midwives a great advance in the knowledge and art of obstetrics.

Four years after the death of the Empress, her son and successor, the reforming Emperor Joseph II, established in Vienna the great General Hospital including the Lying-in Hospital, which was from the beginning the largest of its kind in the world. He moreover sent Lucas Johann Boër (1751–1835) on a tour similar to that of Crantz to France and the United Kingdom. Boër seems to have thought an English training especially valuable for he remained a year in England associating chiefly with Denman and his colleagues, the English contagionists. After he returned to Vienna in 1788, he received the appointment (1789) of director of the obstetrical work in the new hospital where he became the ablest obstetrician of his time and a pioneer of the "natural method."

Trained as he had been among the English contagionists whose method as we have seen was that of scrupulous care and cleanliness and of isolation of sick cases, he introduced similar procedures into the Vienna Hospital and appears to have maintained them in spite of the uncongenial atmosphere which the epidemicists produced upon the Continent. Boër always used the phantom in his demonstrations and appears to have shunned corpses as scrupulously as a Jewish Cohen.

To anyone who was progressive and not trained in England, the use of the phantom instead of the cadaver must have seemed old-fashioned and inadequate. Pressure was therefore brought to bear upon Boër to make use of the cadaver, but this he positively refused to do. Doubtless there was also (as we shall see later) a personal or political motive back of this attempt of the government to coerce Boër. However that may be, his resignation gave place to Klein, Boër's former assistant, who had no such English scruples as his predecessor.

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[1] *Vid. infra.*

While Boër's average death rate had been about one per cent, with the advent of Klein this rose at once from 0.84 per cent in one year to 7.8 per cent in the next year, while during epidemics it sometimes rose to nearly 50 per cent. These epidemics greatly disturbed the government and the hospital authorities; committee after committee met and suggested remedies. But as long as the epidemic theory, that puerperal fever is due to atmospheric-cosmic-telluric influences, dominated the medical world, no adequate solution of the distressing problem could be hoped for.

It is now time to ask: what sort of disease is this with which we are dealing; and how did it appear to the clinicians of this time? Certainly these epidemics were curious things. In the first place they occurred in hospitals. Indeed one might find fever raging in the hospital when the city and surrounding country were relatively free from it. As between one hospital and another, the malady seemed to prevail more in those hospitals where teaching was done and where, under the stimulus of an intelligent student body, one might expect the greatest degree of scientific and manipulative skill. There were other curious things about puerpueral fever. Its incidence was far less in the case of "street births" than among patients who were regularly delivered at the hospital. It was very strange that a woman who had given birth to a child on her way to the hospital or had been taken unprepared at her work and might then have walked to the hospital with the infant in her arms, had a better chance than those women who had come earlier and received every advantage of medical and nursing attention! Another unfavorable circumstance was a prolonged first stage of labor. Where this occurred the patient usually died of fever, and not only the mother but also the child, while on the other hand the women who bore their children prematurely usually escaped the fever.

About 1840 Klein made a redistribution of his pupils according to sex. Up to that time his two clinics had been attended by both midwives and medical students, but now the first clinic was given over to students while the second one was reserved for midwives. No great while elapsed before it became evident that the mortality among the patients of the midwives' clinic was much less than that of the patients of the students' clinic. Here then was a new problem for the epidemicists to wrestle with, and as observations continued to be made other differences between the two clinics came to be recognized. For example the mortality in the students' clinic showed a seasonal variation while that of the midwives' clinic did not show these changes. Furthermore in the students' clinic the patients often became sick *in rows* while in the midwives' clinic the cases were scattered throughout the ward.

Yet other enigma: We have seen that when the first stage of labor was prolonged the chances of life of the mother were decreased and likewise those of the child, through puerperal fever in the first case and through what was called "sepsis of the blood" in the second case. But this was found to be true only in the students' clinic, not in that of the midwives. As for the premature births, these appeared to be of no advantage in the case of the midwives' clinic while in the students' clinic the incidence of fever was much less frequent than with ordinary deliveries as already stated. Finally the women who experienced street births had when taken to the midwives' clinic no advantage over their sisters, whereas when they were admitted to the students' clinic, they did much better than their associates.

THE CANDIDATE

While Klein was professor of obstetrics and his son-in-law Johann Chiari was assistant at the students' clinic; while Rosas was attracting the attention of all ophthalmologists; while Joseph Skoda (1805–81), now famous for his treatise on percussion and auscultation, was about to begin his medical lectures in German; while Carl Rokitansky (1804–78), a Bohemian like Skoda, the ablest writer in the field of descriptive anatomy, was, as professor of pathology, performing some of the 30,000 autopsies he is said to have accomplished in his lifetime; and while Ferdinand von Hebra (1816–80), the founder of the histological school of dermatology, was preparing his new classification of skin diseases; while in short the Vienna medical school was becoming a conspicuous center of medical education, there emerged from the ranks of the student body a young Bohemian from Pest named Semmelweis.

He was twenty-eight years old, somewhat florid, stout and prematurely bald, frank, smiling with something almost boyish in his address and with just a suspicion of a Hungarian brogue. He was a jolly chap, light-hearted but industrious and in comfortable financial circumstances. He lodged in the Josephstadt, the "Latin Quarter," near the General Hospital, and was the fast friend of young Ludwig von Markusovszky, also a student from Pest. He was about the same age as Chiari, the assistant at the students' clinic, and between these two a warm friendship had grown up. Then too, he was known to Skoda and Hebra and Rokitansky, all of whom liked him and were later to become his champions. He had graduated in April, 1843, and now in July of the same year he was applying for the position of assistant at the students' clinic. In August he obtained the degree of Master of Midwifery having attended the prescribed courses several times.

It was Chiari who gave these courses and among the cases which impressed Semmelweis was the following: A woman who suffered only from a fibroid polypus of the uterus had been admitted to the students' clinic, and had had the tumor removed in the usual way; she soon became ill with symptoms similar to puerperal fever and died. Post-mortem examination showed the pathological changes in the parts to be identical with those of puerperal fever and Chiari, voicing the opinions of the time, explained that sometimes the epidemic influences were so virulent that puerperal fever attacked even non-puerperal women.

During the period between his application and his more permanent appointment in obstetrics, Semmelweis assisted informally at the first clinic and also, owing to the friendly interest of Rokitansky, was enabled to spend much of his time performing autopsies on the whilom patients of the department of gynecology. At times as the result of temporary circumstances, he performed also all the autopsies in connection with the first and second clinics.

In February, 1846, he became provisional assistant at the first clinic and his duties were now to make early morning rounds and examinations accompanied by the students who were also expected to make examinations. In this way he visited and examined every patient so as to report to the chief who came later. In the afternoon, as assistant, he gave the students bedside instructions and it was the custom to examine every patient in labor. Moreover, he was always on call when needed to assist the midwives in his division. But in spite of this mass of clinical work he still continued his pathological studies, performing autopsies early in the morning before rounds.

Semmelweis was not only industrious but serious and thoughtful, and the high mortality due to puerperal fever distressed him very acutely. All through the first short period of his assistantship he worried over the appalling number of deaths in his clinic. Above all why was *his* clinic so much worse than that of the midwives? He compiled a table showing the comparative mortality rates of the two clinics. This is the table and it is no wonder he felt perplexed as he surveyed it.

TABLE NO. 1

	FIRST DIVISION			SECOND DIVISION		
	CASES	DEATHS	PER CENT	CASES	DEATHS	PER CENT
1841	3,036	237	7.7	2,442	86	3.5
1842	3,287	518	15.8	2,659	202	7.5
1843	3,060	274	8.9	2,739	164	5.9
1844	3,157	260	8.2	2,956	68	2.3
1845	3,492	241	6.8	3,241	66	2
1846	4,010	459	11.4	3,754	105	2.7
	20,042	1,989	9.92	17,791	691	3.38
		say	9.9		say	3.5

As he looked at this table, Semmelweis knew that the condition was even worse than it was there represented, for it was the custom at that time (and was still in 1864 when Le Fort visited Vienna during the professorship of Späte) to transfer very sick women from the students' clinic to the wards of the general hospital so that their deaths would not appear in the records of this clinic.

Semmelweis turned over in his mind the numerous alleged causes of this frightful scourge. Could it be that the students were rougher in their examinations than the midwives? But how could anyone ever have thought of rough handling as a factor when the act of parturition itself is so much more violent than any digital examination! Nevertheless one committee had thought that this might be a factor and consequently all foreign students had been excluded and the class reduced from forty-two to twenty. At first the mortality had been greatly reduced but it had soon risen again to 14.5 per cent. Could it be due to overcrowding? No, for the midwives' clinic was always overcrowded. Could it be due to wounded modesty? Hardly likely that these women should be over-fussy in the impersonal, professional atmosphere of the hospital ward. Could it be fear? Well, perhaps that might have something to do with it now that the women were so frightened of the first clinic that they wept and wailed when they missed getting admitted to the second clinic. But the fear did not come first. It was the high mortality of the first clinic which induced the fear and not the reverse. Fear or depression of spirits had, of course, to be reduced. The priest, bearing the sacrament, who used to pass through the whole ward of the students' clinic to go to the midwives' clinic and who was accompanied by the tolling of a bell had been persuaded to do differently. He now went around another way and the bell was no longer tolled. But there had been no fall in the death rate. Could it be due to sitting up too early after parturition? No, for there was no difference in this respect between the two clinics, and besides, how about the "street births?" These women were certainly up soon after labor, but apparently this indiscretion was to their advantage, rather than the reverse! Moreover, those who were well versed in the practices of foreigners could recall that Charles White of Manchester (1773) always got his patients up early in the belief that such a procedure, by permitting the drainage of the uterus through gravity, was decidedly beneficial. Could it be due to the weather, to sudden changes and the consequent chilling of the patient? But the weather is not different in the two clinics! Could it be the miasma which clung to an old building and dirty surroundings? No, for it was the midwives' clinic that was in the old building; the students' clinic was in the new building.

Semmelweis soon rejected the epidemic theory. Whoever heard of closing a hospital to stop the cholera epidemic? On the other hand it was not an uncommon occurrence to close a maternity hospital to end an epidemic of puerperal fever! And it really did stop the epidemic; the people were not simply turned away to die in their homes. They remained well in their homes. The cause of the fever must lie in the hospital itself. All those alleged causes which operated equally in both clinics must also be excluded, including weather, diet, medication and all that sort of thing. But it was one thing to reject the absurd, another to discover the rational. As a drowning man catches at a straw so Semmelweis in his helplessness abandoned the use of the dorsal decubitus and began delivering women in the lateral position solely because that was the method employed in the midwives' clinic.

Being provisional assistant is not like being the real thing, but on July 1, 1846, Breit, who had succeeded Chiari, completed his two years of service, and Semmelweis was appointed in his place. Semmelweis' satisfaction was, however, short lived. Breit applied for and obtained an extension of his time for another two years, and the resumption of his duties on October 1st was the signal for the withdrawal of Semmelweis. With Breit's return Semmelweis relinquished his responsibility but nothing could relieve him of his anguish of sympathy for those poor women, or extinguish the all-absorbing desire to solve the problem of puerperal fever. But what could he do now that Breit was back? Plainly nothing in the hospital. Better study English and go to England where the mortality rates were lower. His study of English, however, was soon interrupted. Breit was called to fill the professorial chair in Tübingen and so Semmelweis after a brief holiday in Venice, then a city of the empire, resumed his duties in the hospital.

THE DISCOVERY

Hardly had Semmelweis returned from Venice when he was greeted with the shocking news of the death of Kolletschka whom he had held in the highest honor. As assistant in pathology, Kolletschka often performed autopsies in medico-legal cases with the help of his students and it chanced, at his last autopsy, he had received a puncture wound of the finger from an assistant's knife. Kolletschka thereupon became affected with lymphangitis and phlebitis in the same extremity and died with pleurisy, pericarditis, peritonitis and meningitis, and a few days before his death a metastasis occurred in one of his eyes. Semmelweis wrote:

> In the excited condition in which I then was, it rushed into my mind with irresistable clearness that the disease from which Kolletschka had died was identical with that from which I had seen so many hundreds of lying-in women die. The puerperal also died with phlebitis, lymphangitis, peritonitis, pleuritis, and meningitis and in them also metastases sometimes occurred.

Yes, as some had already been convinced, wound fever and puerperal fever must be the same thing; but it is not the wound *per se* that produces the fatal result, it is the wound made by an instrument rendered unclean by cadaveric material.

Acting upon this inspiration Semmelweis set about cleansing the hands of all those who were to examine the patients of the first clinic. It had been the custom of staff and pupils alike to go directly from the dissecting room and autopsy to the examination of lying-in women. This must be stopped. Semmelweis therefore interposed a bath of chlorine water between the cadaver and the patient, and made it a rule that all must wash their hands in this to free them from the clinging, cadaveric material before making the vaginal examination. Later a solution of chlorinated lime was substituted for the chlorine water because of the inexpensiveness of the former, but the purpose and the results were the same.

The introduction of the chlorine water occurred in May when the death rate was 12 per cent. During the seven months which followed, the death rate was 3 per cent. In the year which had preceded, it had been 11.4 per cent in the students' clinic, and 2.7 per cent in the midwives' clinic. During the next year (1848) the mortality fell to 1.27 per cent in the students' clinic and was now slightly lower than that of the midwives' clinic, namely 1.33 per cent. In short, Eureka! The problem was solved.

But wait a bit, for no critical scientist is thoroughly satisfied when he is told that the fall in the death rate is due to the use of chlorinated lime. To set his doubts at rest he would suggest to this enthusiastic young man that he discontinue the disinfecting process and note whether or not the mortality rises again. To such a suggestion the clinician is likely to turn a deaf ear. He is certain to if he is a conscientious man. But in the present instance an accident occurred which could set at rest the scruples of the most exacting critic. This is how it happened.

Although Semmelweis had numerous friends as Skoda, Hebra and Rokitansky, with his assistant Lautner, who were intensely interested in his discovery, his chief, Professor Klein, took no interest in his proceedings. He gave lectures and Semmelweis did the rest unnoticed. This indifference on the part of Klein was bound sooner or later to produce an effect upon the morale of the students and subordinates of Semmelweis. In September, 1847, the mortality suddenly rose to 5.25 per cent. The experiment had been made, the proof was complete, and we can at this distance take philosophically what to Semmelweis was a thing of shame and horror, a student in carelessness or levity had neglected the prescribed technique. We are told that the anger of Semmelweis was frightful and that he said to the student "things easy to understand."

The technique which was at first employed was to wash in chlorinated lime before making rounds and then between cases to wash only with soap and water. For a time this procedure seemed adequate but suddenly a calamity descended upon the ward. Of twelve women eleven contracted puerperal fever and died! Whence the poison? Certainly not from the cadaver, for the chlorinated lime could be trusted to do its work. It must have been the woman in bed No. 1 who had had a foul-smelling cancer of the cervix. Evidently puerperal fever could be caused not only by cadaveric particles but by putrid matter derived from living organisms. The use of chlorinated lime was successfully extended to meet such contingencies.

At last everything was clear. The street births and the premature births were of course favorable circumstances for then the patients were not examined. The prolonged first stage was, on the other hand, most unfavorable for then the patient was repeatedly examined, while the sickness in rows meant merely the transfer of infection from one patient to the next by the examiner. Even the improvement due to excluding the foreign students was accounted for, for nearly all the foreigners took pathology with the celebrated Rokitansky! They had to make the most of their time at Vienna. The assistant at the time when the foreigners were excluded did but few autopsies and his students followed his example. On the other hand, Semmelweis' own frightful death rate of 18 per cent in one month and 12 per cent in another was accounted for by his zeal and industry in pathological examinations. The seasonal variations did not coincide with the changes of the weather but with the presence or absence of students and the lower death rate in hospitals where there were no students at all was now readily explicable.

By the autumn of 1847 the doctrine of Semmelweis had been clearly and undeniably established. In brief it was this; that puerperal fever is caused by decomposed animal matter conveyed by contact to the lying-in woman, and derived from the cadaver or from a living person affected with a disease which produces a decomposed animal organic matter.

He was now urged by his friends to publish his results and when he hesitated to do so Hebra, who was at the time editor of the *Zeitschrift der k.k. Gesellschaft der Ärzte zu Wien*, wrote an article which appeared in the December number of the periodical in question and which contained all the essentials of the discovery, to which were added references to the student who had failed to disinfect his hands and to the patient in bed No. 1 with a foul-smelling medullary cancer of the uterus. About this time also several of the foreign graduate students, friends of Semmelweis, wrote private letters to their former professors in an attempt to spread the new discovery: Routh of London; Kussmaul, formerly Nägeli's pupil in Heidelberg; Stendrichs of Amsterdam, who wrote to Tilanus; Schwartz of Kiel, who wrote to Michaelis; and Wieger of Strasburg, who wrote probably to Stoltz. In this connection the letters of Brücke to Schmidt of Berlin, and of Arneth, of the midwives' clinic, to Simpson of Edinburgh, may be mentioned also, although neither of these were written until a little later.

But suddenly there came the upheaval of 1848 and an eruption of the lava of the political world into the quiet productive strata of the world of science, banishing for a time all thoughts of anything but the eruption itself.

VIENNA IN 1848

We have seen how Maria Theresa (1740–80) had promoted the development of obstetrical science and how her son, Joseph II (1780–90) had continued her policy and sent Boër to Paris where through the influence of Marie Antionette, the emperor's sister, he had obtained access to the exclusive precincts of the Maternité.

Joseph II was a rationalist and progressive by nature and his efforts at drastic reforms from above remind us of those of Lenin, of Cromwell or of Peter the Great. Among other tasks he set himself to improve the conditions of his Hungarian subjects, including in his high-handed way the Germanizing of this intensely nationalistic people. But on the whole his rule seems to have been both benevolent and tolerable. On his death in 1790 he was succeeded by his brother Leopold (1790–92), who had himself crowned Holy Roman Emperor, a procedure to which Joseph had refused to submit.

Francis II (1792–1835) Leopold's son and successor, had hardly begun to reign when the French Revolution spread alarm among all conservative statesmen, who became at once aligned against the new republic. The execution of the king and subsequently of the queen moreover sent a thrill of horror through all royalist circles, recalling the emotions consequent to the death of Charles Stuart. This must especially have affected Francis II, the nephew of the unfortunate queen. These events, succeeded as they were by Napoleonic aggression, placed the reactionaries everywhere in power.

It was during this prolonged period of reaction that, as we have seen, Boër was ousted and replaced by Klein. It was then too that the *Burschenschaften* were suppressed at the universities and that toward the nations subject to the Empire the policy of reform and unsuccessful Germanization was succeeded by a grinding tyranny on the part of the Austrian overlords. In Hungary in spite of oppression and especially the discouragement of education, Count Stephan Szechenyi began in the twenties to create and lead an era of progress and amelioration.

Francis, "Our good Kaiser Franz," as he was called, had a passion for detail which resulted in the growth of a system of government cumbrous, inelastic, inefficient and irritating, which he bequeathed to his son and successor, the epileptic Ferdinand I (1835–48). His son also inherited his father's prime minister Metternich, whose policy has been called that of "stability." This consisted in keeping the various sections of the Empire quiet by the balancing of one race or nationality against another, by judicious use of the censorship and the army and the promotion of clerical influence in education. This "stability" at home left Metternich time to engage in foreign diplomacy where his interests really lay.

By 1846 the "stability" of the empire seemed rapidly weakening. There were risings in Galicia and Ruthenia which were both agrarian and nationalistic in character, and order was restored only with much bloodshed. In Pest there had been a realignment of political parties, and on a platform of ten points which included responsible ministries, right of public meeting, religious liberty, universal equity before the law and abolition of serfdom, the progressives under Déak swept into power. The Imperial government saw before it nothing possible but the dissolution of the diet, when suddenly the news arrived of the revolution in Paris. This was on March 1, and on the third, on the motion of Kossuth, the diet appointed its own ministry. Events now succeed one another with alarming rapidity.

On the 11th the "young Czechs" party at Prague draws up a petition embodying nationalistic and liberal demands and on the same day the diet of Lower Austria petitions the government to call a convention of delegates from the local diets.

On the 12th the government agrees to call the meeting in question. But by this time the revolution is underway, the diet is invaded by a mob of students and workingmen, and Kossuth's recent speech in the Hungarian diet at Pest is read aloud. It refers to the Galician and Ruthenian affair. "From the charnal house of the Vienna cabinet a pestilential air breathes upon us which dulls our nerves and paralyzes the flight of our spirit," rang the hot words of Kossuth. The mob of students, proletariate and petty bourgeoisie then starts for the Hofburg bearing a petition. This the government receives and promises at once to transmit to the Emperor. Meanwhile a riot has occurred around the diet and in an encounter with the soldiers blood is shed.

On March 13th the Emperor hastily appoints Louis Batthyanyi premier of the first Hungarian responsible ministry which included Kossuth, Szechenyi and Déak and the ten points are adopted. On the same day Metternich flees to England.

The 14th is also a busy day for now the Emperor ratifies the election of Jellachich as ban of Croatia and authorizes the formation of a National Guard of students and citizens which forthwith begins to impose its will upon the Imperial Government.

On the 15th the government proposes to summon a central committee of local diets but this is not satisfactory to the revolutionists, and so on April 25 a constitution is proclaimed. As this includes the whole monarchy with the exception of Hungary and Lombardo-Venetia, the Czechs and Poles at once object, while its undemocratic method of election antagonizes the radicals in Vienna.

On May 13th a central committee of students and national guards is formed and two days later a new outbreak occurs. This leads the government to go a step further and agree to a National Convention of a single chamber elected by universal suffrage.

On the 17th the Emperor leaves for Innsbruck "for the benefit of his health." Thence he issues a proclamation appealing to the loyalty of his still faithful subjects and confirming only his concession of March, namely, the summoning of a central committee of local diets. He also orders the closure of the University, which leads to a fresh outbreak on May 26th.

The government now yields to all the demands of the insurgents and hands over the treasury and the police power of the city to the newly formed Committee of Public Safety.

But now there arises a movement of unrest among the various peoples of Hungary and adjoining regions who are resentful of the Magyar's former domination and jealous of their present success. Croatians, Vlachs, Serbs, Rumans and Slovaks, all talk of national recognition. This disaffection is fanned vigorously by Jellachich, the new ban of Croatia. Against this new outbreak the Emperor seeks aid from the Magyars on the ground of the ten points granted. But Kossuth, who now dominates in Pest, seems reluctant to ally himself with Austria.

Jellachich now shows his hand. He repudiates the Hungarian diet and rallies the outraged nationalists for the Emperor against the Magyars.

Bohemia and Galicia have received separate constitutions. But there is still a strong revolutionary party in Prague. This coincides with race lines. The radical Czech students and populace rise up against the conservative Germans on June 12. But the rising is promptly suppressed by Prince Windischgrätz and the imperial soldiery.

The victory of Windischgrätz at once precipitates the impending race war. The diet of Frankfort commends the prince as a national (i.e., German) hero, and all demands of democracy are forgotten. In Vienna the majority of the Germans part company with the Magyars, the former going over to the Emperor.

The future of events now turns upon the revolution in Italy. The Magyars recall their regiments from the imperial army while Jellachich tells the Croatians to stay and fight for the Austrian Empire. This brings about a new alignment, namely Kossuth and the Magyars against the whole Empire. Late July and early August see the successful crushing of the Italian insurrection and the liberation of the imperial army for the campaign against the Magyars.

Meanwhile new trouble has broken out in Vienna where the radical populace opposes the Emperor and the Slav majority in the Reichsrath. The German democrats appeal to the Hungarians for help. Now Windischgrätz is marching on Vienna. The Reichsrath withdraws to Brünn leaving the city in possession of the proletariate, the German radicals and the students. A detachment of the National Guard is hurriedly sent to meet Kossuth, and with this force marches Semmelweis, who has been a most active and enthusiastic member of the "Academic Legion," consisting of professors, students, medical practitioners and lawyers. But Kossuth does not come; he has been successfully intercepted by the imperial troops.

On October 28, Windischgrätz attacks Vienna and in three days the city is in his hands. After a court-martial and the execution of a member of the diet, he is ready to receive the congratulations of the imperial general in Italy and (a significant fact) of Czar Nicholas.

Bound as he was by all sorts of promises to all sorts of revolutionists, Ferdinand now abdicates (Dec. 2) leaving his nephew, Francis Joseph, free-handed to inaugurate any policy which may seem expedient. The new emperor now declares that he is "firmly determined to preserve undimmed the luster of our crown, but prepared to share our rights with the representatives of our peoples. We trust that with God's aid and in common with our people, we shall succeed in uniting all the countries and races of the monarchy in one great body politic."

There remained only to settle with the Hungarians. How that was done we shall see in due time. For the present let us return to the University of Vienna where things appear to be going on as usual except perhaps for some feeling of embarrassment in the intercourse between the upholders of the Empire and the former members of the National Guard. Here we find Semmelweis again. He has doffed his picturesque uniform and waving plume. He has returned to find that during March not a single new case of puerperal fever developed in this hospital! We wonder too how he will feel when he first meets his chief, Professor Klein, the friend of the reactionaries, as Semmelweis would think; the friend of all sane and reasonable people, as Klein himself would doubtless express it.

FACTIONS

However much the University of Vienna might appear to be unchanged, it was not quite like the old institution before the revolt of 1848. There were now two opposing factions there, conservative and liberal. As it happened the friends of Semmelweis were all on one side so of course those on the other side became his enemies. Indeed quite a struggle was brewing over Semmelweis in which one party sought to get rid of him while the other sought to have him advanced. By the compromise which resulted, Semmelweis was retained but not advanced, in fact, rather the contrary. Unfortunately Semmelweis did not regard his treatment as merely a part of the game but took umbrage as we shall see. For the present, however, let us direct our attention to the steps in the contest between the two factions, noting the effect of the fate of Semmelweis upon the progress of antisepsis, for it is always interesting to observe whether or not the idea and the man can be dissociated and to what extent they may function independently.

Meanwhile the letters which had been sent abroad by the graduate group began to produce results. Simpson of Edinburgh mistook the theory of Semmelweis for the English doctrine of contagion and is caustic in his reply. Michaelis of Kiel is delighted with the results of his trial of Semmelweis' method. Tilanus of Amsterdam, a contagionist, replies with appreciation and expresses distress at the blindness of Kiwisch. Stoltz of Strasburg is indifferent or opposed. Schmidt admits that cadaveric poison has a share in the production of puerperal fever, but believed (as did Semmelweis himself) that there were other causes.

As Semmelweis still remained reluctant to publish anything, Hebra now wrote a second article. It was quite brief, referred to his previous article, and likened Semmelweis to Jenner.

In January, 1849, Skoda proposed that a commission be appointed to investigate the matter of Semmelweis' discovery. The great majority of the committee of professors favored this but the reactionary Klein had the ear of the minister of education so that the proposal of Skoda was declared to be only a veiled attack upon Klein, who alone was authorized to institute such an inquiry. Klein's commission was appointed but never met.

In February, 1849, Dr. Carl Haller, senior physician and assistant director of the hospital, made a communication to the medical society of Vienna. While preparing his hospital report of 1848, he had been deeply impressed by the statistics of the students' clinic and he took this occasion to bring the work of Semmelweis before the profession. He expressed his profound appreciation of this work and of the immeasurable importance of the doctrine to surgery, saying that "it is worthy of the attention of all men of science, and certainly deserves due recognition from the high authorities of the State." Haller then moved that Semmelweis be invited to address the society, a motion which was carried.

When on March 20, 1849, the end of his two years' term of office expired, Semmelweis sent in a request for an extension of two years (Breit had been the first to succeed in doing this). The extension was granted to Arneth of the second clinic, but not to Semmelweis. It is also significant that his successor, Braun, in the course of time obtained the privilege denied to Semmelweis. Semmelweis then petitioned for nomination as *privat-dozent* in midwifery, but it was many months before he received his reply.

In June, 1849, Semmelweis was elected a member of the medical society.

In October, 1849, Skoda addressed the Vienna Academy of Sciences on the discovery of Semmelweis. Unfortunately he overemphasized the rôle played by cadaveric poison, thus favoring a mistake which the opponents of Semmelweis were only too prone to make. When the article was published it aroused the wrath of Scanzoni of Prague. Here also for the sake of appearances, a committee of investigation was appointed in 1849 by Herr Professor Ritter von Jungmann, but the committee never met. Soon after this Scanzoni was called to Würtzburg leaving Seyfert to represent Prague in the controversy. Semmelweis was at once elected a member of the Academy and a sum of money was offered to him and to Brücke to continue their experiments. This Semmelweis declined saying that the clinical evidence was sufficient.

In 1850 Bednar, the chief physician of the foundling hospital, published a monograph on the "Sepsis of the blood of the new born" in which he attributed the decline of this disease to the chlorine washing instituted in the students' clinic by Semmelweis.

The May, June and July meetings of the Vienna Medical Society in this same year (1850) were fraught with exceptional interest for the progressives. At the first Semmelweis pointed out that there had been no such epidemics during Boër's time as had raged during the time of Klein, which must have sounded agreeable to the ears of the professor of obstetrics. He then went on to mention for the first time the dangers of unclean instruments and utensils as well as of unclean fingers. At the June meeting Semmelweis spoke again replying to the criticisms of Scanzoni, Seyfert and the local terrier, Zipfel. It was in the course of this address (specifically in his reply to Seyfert) that Semmelweis emphasized for the first time the need of disinfection in gynecological practice. In July Semmelweis appears not to have spoken but the comments of his friends must have been most gratifying. Johann Chiari, who as already stated, was Klein's son-in-law, spoke appreciatingly of the work of Semmelweis. Then came Dr. Helm, the temporary director of the General Hospital, who vigorously resented the unfair and malicious attacks of Professor Scanzoni, his assistant, Seyfert, and Privat-Dozent Zipfel. Then Arneth, of the second clinic, expressed his appreciation and finally Professor Rokitansky, the presiding officer, expressed his. It must have been a great day for Semmelweis as he waited for the results of his application for the position of *Privat-Dozent.*

At last just before the opening of the session in October the answer came. It appeared as though the conservatives dared not refuse him entirely but in retaining him they had tried to make his position as unpleasant as possible, for he was appointed *Privat-Dozent* of theoretic midwifery, *with restriction to the use of the phantom in teaching.* It was a mean though clever scheme, but had Semmelweis not taken the affair so tragically, had he accepted this as a challenge rather than regarded it as an insult, I feel that his friends would have seen him through eventually. But let no one be harsh in his criticism of the discoverer of the cause of puerperal fever. Let us rather try in a sympathetic way to follow in imagination what were his most probable thoughts at this crisis.

This was plainly an insult. Well, what of it? Suppose they did reject his discovery; suppose they did continue to sacrifice to their vanity and stupidity whole hecatombs of Viennese mothers! What could one expect! Had not Auenbrugger, the inventor of auscultation, lain unnoticed and despised in Vienna until Corvisart discovered his book, translated it into French and made him famous! Had they not looked with suspicion upon his friend, Skoda, the inventor of percussion; had they not refused to credit his allegations as to the usefulness of his device and transferred him to the lunatic asylum on the ground that his thumping hurt the patients at the General Hospital! What could one expect from such people! With their *genius epidemicus* and their death rates of twenty per cent! What could his friends be expected to do for him with Klein, the obstetrician, Rosas, the ophthalmic surgeon, and the minister of education all against him. Even Kussmaul in his visit three years before (1847) had seen how things were, that incompetents owed their patronage to distinguished women and influential priests, and had called the prevalent favoritism "revolting." How much clearer did he, Semmelweis, see these things which were snuffing out his future career, and smothering his discovery!

What should he do and where should he go? His thoughts turned to the home of his childhood, to Buda across the river from the city of Pest. He recalled his childhood, his parents, Hungarian in everything but their names, and their eight children of which he himself was the fourth son. His father, the shop-keeper, was now dead. His mother, Theresa Müller, had also died. He recalled how he had stood by her deathbed six years before (March, 1844), when his fellow students were receiving their doctors' degrees in Vienna. He had wondered at the time how the authorities would treat his absence for which he had left no letter of excuse or explanation. But they had given him his degree in April. He recalled his scanty education, at school and gymnasium, for education had been at a very low ebb in Hungary in his day, thanks to Metternich and his "stability." Then there was the time when he, Ignaz Phillip Semmelweis, had attained the mature age of seventeen, and had been enrolled as a student of "Philosophy" at the University of Pest, across the river. Here, where they taught literature and the classic languages including Latin, which was still the formal language of the educated Magyar, he had remained two years. Then came the eventful autumn of 1837 when he was nineteen and had set out for Vienna to study law. How disappointed he had been in law! How fortunate it was that he had gone with that medical student to hear the lecture on anatomy which had been the turning point of his life! Since then Vienna had been his home except during the years 1838 and 1839 when he was at the University of Pest again. What did it all matter now?

He was angry, disgusted, disheartened. Without a word, even of good-bye to his friends, he returned home to Buda-Pest.

"DIE VATERSTADT"

We left the eighteen year old Emperor declaiming a throne speech and Prince Windischgrätz receiving congratulations from the victorious general in Venicia-Lombardy and from Czar Nicholas I, but their rest was a short one. Kossuth had been prevented from sending help to beleaguered Vienna. So far so good, but he and his Magyars were still in revolt and as a matter of fact had beaten Jellachich and his nationalists, the emperor's allies, as the first step in the war of independence.

Windischgrätz now marched with fire and sword on Pest and the city surrendered. But the patriots moved their capital, declared Hungary a republic, continued the war throughout the winter, defeating the Austrians and their allies, until the latter in despair called upon Nicholas to help them in their predicament.

The Russians came promptly and, favored by dissensions and jealousies among the patriots, overwhelmed the latter with an immense army and brought the rebellion to a close. Kossuth fled to Turkey and later came to America which in those days was an asylum for political refugees.

From October, 1849, to July, 1850, Hungary was governed by the Russian general Haynau, who instituted a reign of terror, executing the innocent conservative and ex-prime-minister Count Batthyanyi along with thirteen rebel generals as one of his exhibitions of thoroughness.

From 1851 to 1860 Hungary was ruled by an imperial council responsible to the Emperor alone. German was made the official language and local governors were persons who did not understand the Magyar tongue.

When Semmelweis reached his native town he found it in a "state of siege" and in this state it remained for the next five years. His father and mother were dead, but he still had a brother who was a clergyman and who had patriotically assumed a Hungarian name; he had also a married sister but his remaining brothers had been implicated in the revolution and had fled. The intellectuals were scattered and held almost no intercourse. "We lived as it were in the darkness of night," said one of them. Semmelweis sought out his old friend Markusovszky. Turning next to the medical school he found that it had almost ceased to exist. Some of the professors had been deposed, among them the editor of Hungary's only medical journal, so that this publication had been discontinued. Von Balassa, the alert and progressive professor of surgery, was in prison. Many had fled. The Hungarian Academy of Sciences had had its sittings suspended. The medical society of Pest met in the presence of a police officer and the minutes of the meeting had to be submitted to the authorities.

One of his first evenings in Pest Semmelweis spent in the company of a considerable number of medical men. Because of his presence the conversation soon turned to the subject of puerperal fever and an objection was raised to the view expressed by Semmelweis on the ground that although no teaching was done at the obstetrical division of St. Rochus Hospital, an epidemic prevailed there at that very time.

On the following morning Semmelweis paid a visit to St. Rochus to satisfy himself as to the conditions presented. He found the lying-in patients occupying the same wards as the surgical patients, both being served by the same staff. The chief of the surgical staff was likewise head obstetrician, nor was that all, for it was this officer whose duty it was to perform all the medico-legal autopsies, while his staff performed all the autopsies of the surgical and obstetrical divisions. One may imagine the sensations and thoughts which such observations aroused in Semmelweis and which are best appreciated from his acts. On May 20, 1851, he took charge of the obstetrical division of the St. Rochus Hospital as unpaid, honorary, senior physician. And as a result the average mortality in the next five years dropped to 0.85 per cent.

St. Rochus, although a six-hundred-bed hospital belonging to the commune of Pest, had but an intermittent obstetric service. It accepted obstetrical cases only during the vacations when the obstetrical clinic at the University was closed. The head of the latter was Professor Birly, who, like Klein, had been a pupil of Boër. Birly would not even try the chlorine disinfection: he had a good enough method of his own of which the essential element was purgation. Semmelweis seems, however, to have won the appreciation of others for when old Birly died suddenly in 1855, the minister of education seemed to feel that he could not well pass over Semmelweis. The latter was known to be a loyal Hungarian but he had been on his good behavior for seven years and doubtless seemed harmless enough politically. And so he was appointed in July, 1855, professor of theory and practice of obstetrics at the University.

I shall not detail the work of Semmelweis at the University. Suffice it that, in spite of overcrowding, dirt, the sometimes supercilious disobedience of his staff, official stinginess and so forth, the average mortality reached the unprecedented level of 0.39 per cent. His experiences at the University Hospital were not always so encouraging for the next year an epidemic broke out. Semmelweis traced it, however, right to its source, dirty dressings, bedclothes and carelessness on the part of the attendants.

According to his personal friends the character and appearance of Semmelweis were at this time very pleasing. Although bald and stout he was well set up and of a ruddy, healthy appearance. Towards the poor and suffering he showed unbounded kindness of heart and helpfulness. His temper was hasty and he was readily excited, but was as easily pacified. He was extremely conscientious in his professional duties, but a poor man of business. In his unconventional frankness he recalls François Magendie. This quality did not appeal to the fine ladies of Buda-Pest. "Countess, I congratulate you; I have made a mistake," he cried upon one occasion when a diagnosed cancer turned out a benign pelvic tumor. Such admissions shake the faith of little minds, but of little minds only.

Meanwhile the heavy hand of Austria had gradually relaxed its hold. In 1854 the five years "state of siege" was raised and in 1856 an amnesty was declared. Backed by such men as von Balassa, now at large, Semmelweis and Hirschler, the *Hungarian Medical Weekly* was started again in 1857, with Markusovszky as editor. To the bright prospect of the revival of scientific medicine and medical education there was added the satisfaction of recognition, for Semmelweis now received a very flattering call to Zurich as professor of obstetrics and gynecology. Just why Semmelweis refused this invitation we do not know. Perhaps it was because the position had just been refused by his bitter and unscrupulous opponent, Carl Braun, and Semmelweis felt that he could do no less; perhaps it was his feeling of loyalty to his Vaterstadt; perhaps it was to please the young woman of eighteen, Maria Weidenhofer, whom he married at about this time. Who can tell?

The student of character will always find in Semmelweis an interesting subject of speculation. It is not that Semmelweis' behavior is difficult to account for but rather that, as there are several possible explanations, it is not easy to decide which is the most probable on the basis of the few known facts. Nevertheless it behooves those who seek an understanding of the ways of men to consider and appraise his conduct. There are three outstanding facts which demand analysis, (1) the motive of his discovery, (2) his reluctance in writing, (3) the circumstances of his departure from Vienna. Let us briefly consider each of these seriatim.

According to his own account, written however nearly fifteen years after the event, his discovery of the etiology of puerperal fever was as much an affair of the heart as of the mind. The driving force was not so much intellectual curiosity which is itself a divine thing, but an agonizing sympathy which is perhaps even more divine. On this emotional basis his intellect performed its induction. Others were cognizant of the same facts but they were insufficiently aroused or being aroused were intellectually inadequate to meet the situation. A comparison of Kiwisch, Tarnier, Chiari, Holmes and Semmelweis would afford most interesting material for a character study.

In regard to the second fact we are told that as a boy Semmelweis was clever, with a ready tongue, full of energy, warmth of heart and imagination which found copious expression until with adolescence he became self-conscious and lost his ability to use the spoken, and especially the written, word.

With the sources of this evidence I am not familiar but as his reluctance to write and speak was shown when he was barely thirty, and was at that time conspicuous enough to arouse much comment, a connection of this trait with the onset of puberty may well have been advanced at that time. We are told, however, that during this period Semmelweis was dominated by the idea that the spread and recognition of his discovery ought to occur in proportion to its value and innate truth. It was owing to this attitude that his friends, Hebra, Skoda, Haller and the graduate students already mentioned, began to advertise his doctrine for him both in speaking and writing. When the fact was borne in upon Semmelweis that his doctrine was not spreading as it ought, he was not stimulated to help the good work along, and in the light of his later behavior and writings one is inclined to believe that this failure aroused only his resentment. May we not again interpret his conduct in the same way as in the first analysis? A basis of emotion upon which operates an intellectual element, which is on this occasion wholly inadequate to meet the situation or, what amounts to essentially the same thing, an emotion acting as an inhibition to an already deficient technical or mental equipment.

Finally his sudden withdrawal from Vienna, which took place without the proper and normal leave-taking of those older men who had befriended him and gone out of their way to be kind to him and which, it is said, permanently alienated Skoda from him, cannot be explained on any rational basis.

The history of scientific discovery is full of the scoffings of the Pharisees. Almost every innovator has aroused the antipathy of some person or group of persons who, if weak, nagged him, or if powerful, persecuted him. Semmelweis must have known the story of Skoda and probably that of Auenbrugger. He may not have realized that the march of human thought is adorned by the gibbets of its leaders whose bones their successors carry lovingly to the Pantheon. But nevertheless, he must have known enough of such matters to have kept him in Vienna, had he not been swept away by his emotion of resentment.

But while deprecating the emotionalism of this interesting Magyar, let us not forget that it was probably this same characteristic which spurred him on to his splendid discovery and that the emotional nature which is rich without violence is reserved for the superman.

Whatever may have been the cause of the reluctance of Semmelweis to publish anything, the unfortunate fact remains. I say unfortunate because of course, Semmelweis' friends made mistakes in their presentation of his views. To be sure the first paper of Hebra cannot be objected to, but Brücke and Skoda both overemphasized cadaveric poison so that even Schmidt of Berlin with the best of intentions, and of course, Scanzoni, with the worst, attributed to Semmelweis the belief that the cadaver was the sole source of puerperal fever. Moreover, Arneth's letter to Simpson of Edinburgh must have been obscure since the latter, as already mentioned, failed at first to see any distinction between the theory of Semmelweis and that of the English contagionists.

At last the surprising thing happened, Semmelweis began to write. Happily married, with two hospital clinics under his control and an invitation to Zurich just declined, he seemed to have acquired a sufficient *vis a tergo*, and when he once began to write he seemed to find it hard to stop. At first he confined his writings to articles for Markusovszky's medical weekly, but soon he began his great work, "Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers,"[2] which he did not complete until 1860. Its 550 pages contain all that Semmelweis knew about puerperal fever from his own experiences and experimentation, analyses of conditions prevailing in Europe, answers to his critics, and invectives for those who had treated his idea with hostility or contempt.

It is much to be regretted that Semmelweis waited until he had so much to say. Of course the mass of material is rationally compelling, overwhelming in fact, but one feels toward it as a certain critic felt toward Upton Sinclair's "Brass Check," namely that it is "an overdose of truth." Furthermore, the "Aetiologie" is in no sense a work of art, which was most unfortunate in so large a volume. Years later even Virchow seemed not to have read it attentively. The value of attractive scientific writing cannot be too strongly stressed whether the field be that of the natural sciences or of the social and historical. Hardly any one at the present time reads Strauss' "Life of Jesus" while that of Claude Bernard's friend, Ernest Renan, is still justly popular. Hutton presented to the English geologists the brilliant work of Saussure and Desmarest, but it was not until Playfair rendered their ideas into more readable English that they became generally appreciated. Compare on the one hand the etiology of Semmelweis and its superior scientific merit with Holmes' "The Contagiousness of Puerperal Fever"[3] or his "Puerperal Fever as a Private Pestilence,"[4] which through its literary merit is read and reread by those who never have opened or will open the "Aetiologie." We are accustomed to regard it as proper that the poet or essayist should exert himself in the production of real literature. We recall that Virgil once said of himself that he sought to improve his lines like an old she-bear who beautifies her cubs by licking them. But we sometimes forget the advantage to science of similar carefulness and are surprised to learn, for example, that the superscientist Helmholtz was most fastidious, often rewriting his manuscript six times before submitting it to the printer. As it was, few people seem to have waded through the "Aetiologie," to judge from the comments which contemporary writers made upon it. Ten years later people were still urging objections which had been answered convincingly and at great length in this chef d'oeuvre of Semmelweis. But let us not complain too bitterly of the style in which the "Aetiologie" was written, let us rather rejoice that Semmelweis had at last found a means of expression and produced a classic in the realm of medical science, if not in that of literary art.

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[2] Budapest and Vienna, 1861.

[3] *N. Eng. Q. J. M. & S.*, Boston, 1842-3, i.

[4] Boston, 1855.

Before the end of the year (1861) Semmelweis published a second work, the scathing "Open Letters to Sundry Professors of Obstetrics."[5] A consideration of this bitterly controversial work need not detain us. There would be today little profit and less pleasure in so doing.

At length, tired and vexed by endless disputation, Semmelweis yielded to the advice of his friends and let discussion of puerperal fever and its etiology drop entirely. It was indeed high time, for he had begun to show alternate periods of excitement and depression when engaged in these polemics. He now turned his attention to gynecology which he had always maintained was so intimately associated with obstetrics that these two branches ought never to be separated in teaching or practice. Unfortunately about this time he was displaced from his position on the staff of the St. Rochus Hospital where he had had numerous gynecological cases.

Of course, he introduced into gynecology the antiseptic technique which he was using in obstetrics. He put much zeal into his teaching and for the first time gynecology became popular in Hungary. In 1865 he performed the first ovariotomy done in his country, probably at the instigation of Markusovszky, who had just returned from the British Isles where Charles Clay, Baker Brown, Spencer Wells and Thomas Keith were attracting the attention of Europe and America. At this operation von Balassa, the professor of surgery, acted as assistant and there were present a large number of practitioners of medicine and members of the university faculty. The patient died but a start had been made and soon von Balassa and later Tauffer, Kenzmarszky and others began to get excellent results.

Semmelweis now began to show many eccentricities in behavior which aroused the ever increasing anxiety of his friends. The signs of mental disturbance increased and on August 1, 1865, on the advice of his colleagues, Hebra placed him in the Vienna Insane Asylum under Riedel's care. Shortly after his arrival a neglected infection of the hand was found. This discovery, however, came too late. Blood poisoning set in from which he died two weeks later (Aug. 13, 1865). The post-mortem examination showed not only the usual lesions of an infected wound but also extensive organic disease of the brain. He was buried in Vienna but in 1891 his remains were conveyed to Budapest.

His friend Markusovszky wrote his obituary notice[6] and as a close friend of Semmelweis for many years his characterization of the man is of interest to us. "He was," writes Markusovszky, "an upright, natural man, and it was impossible for him to be otherwise. Egotism and cringing were equally foreign to his honorable soul."

VICTORY

It would seem now highly proper to sketch the spread of Semmelweis' doctrine. I shall do this best by calling attention to the accompanying table (Appendix 1).

As we peruse this table we are struck with this fact, that Semmelweis after all won most of Germany over to belief in the infectious nature of puerperal fever before 1875. His bitter and unscrupulous opponents were largely confined to three localities of which the chief was of course Vienna, where Klein was succeeded by Karl Braun. Next came Prague, where Scanzoni was already committed to a theory of his own which he and his successor Seyfert felt bound to defend. Lastly there was Würtzburg which Scanzoni so thoroughly infected with his venomous misrepresentations that he brought down upon Semmelweis the Würtzburg faculty represented by his own assistant, Silberschmidt, Otto von Franque, Bamberger, professor of internal medicine, and even Virchow, who after the revolt of 1848 spent seven years in Würtzburg.

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[5] Pest, 1861.

[6] *Orvosi hetil.* [Hungarian medical journal], Budapest, 1865.

We see also that in England and France the general introduction of antiseptics into obstetrical practice was due not so much to Semmelweis as to the rise of bacteriology. So much by way of comment; further than this the table speaks for itself.

There is a certain grim satisfaction in seeing the opponents of Semmelweis one by one recognize his discovery. And I for one am psychologist enough to be interested or cynical enough to be amused in seeing how they did it. In the last five years we have ourselves all made so many misstatements that a general liquidation of these is easy and the man who has tried to save his face has generally been playing to an empty house or before his looking glass. But in the case of the doctrine of Semmelweis the matter was different, his opponents were few but conspicuous and the saving of their faces became a matter of some importance. Their problem was to adapt themselves to a society which was already accepting the gospel of Semmelweis and was only waiting for a respectable period to elapse, say fifty years, before canonizing him with the erection of a statue (1906).

Now how could one accept the doctrine of Semmelweis after he had scoffed at it, without appearing (to himself at least) to have made a mistake. The power of human beings in self-deception seems to be unlimited and the methods manifold. Let us not perpetuate the names of those who sought to save their faces by the following methods; (1) to adopt the practice of disinfection while ignoring Semmelweis entirely, (2) to smile with amused indulgence while disinfection is being employed by one's enthusiastic assistant, (3) to say that Semmelweis has recently corrected his previous inadequate belief that all puerperal fever is due to cadaveric poison, (4) to belittle Semmelweis by dividing his honor with several other people who came later, (5) to attribute Semmelweis's discovery entirely to some one else.

Examples of all these methods may be found but let us draw the veil over these stories "of the follies, misfortunes, and vices of mankind" and endeavor to carry away with us only a feeling of unmixed appreciation of the achievement of Semmelweis and of thankfulness for his great discovery.

APPENDIX I

Dates relating to the life of Semmelweis

1818	Birth
1835	Enters University of Pest
1837	Enters University of Vienna
1838–9	Attends University of Pest
1840	Returns to Vienna
1844	Graduation
	Obtains further degree of Master of Midwifery
1846	Appointed assistant at the "Students Clinic"
1847	The discovery
	Hebra's first account of Semmelweis' discovery
1850	Return to Pest
1861	"Aetiologie"
	"Open Letters"
1865	Death in Vienna

APPENDIX II

The names underlined are of those who supported Semmelweis; the broken line indicates those who were acquainted only with the "cadaveric theory," which, however, they recognized as valid as far as it went. Where dates were not easily accessible they have been omitted.

History and Distribution of the Use of Chlorine Disinfection

	'50	'55	'60	'65	'70	'75	'80
Edinburgh	'50 Simpson				Hewitt	Duncan	'75 obstet. soc.
					Playfair	Hicks	
Dublin	'51 Murphy		'61 Denham	'69 MacClintock	Thorburn	Barker	
				Barnes	Lehman	Others.	
London	'48 Routh						
Amsterdam	'48 Tilanus						
Stockholm	Retzius						
Christiania	Faye						
Copenhagen	Levy						
Helsingfors	Pittinkold						
St. Petersburg			'63 Gruenewald, etc.				
Cracow		'58 Dietl					
Paris		'58 Trousseau Dubois Danyau Bruillaud Cauveillier					
Göttingen			'61 v. Siebold				
Strasburg	Stolz						Freund
Heidelberg			'61 Lange				
Hannover	?Dourmes		? Kugelmann				
Erlangen	'51 Rosshirt				'71 Schroeder		
Munich	A. Martin		'61 Hecker				
Kiel	'48 Michaelis	Bamberger					
Giessen	Liebig	Silberschmidt					
Würtzburg	'51 Kiwisch...	Scanzoni Franque Virchow			'67 Scanzoni		
Berlin	Schmidt		'64 Hirsch		'71 E. Martin		
	'52 Busch		'64 Virchow				
	?Pernice						
Greifswald			'61 Veit		'67 Veit		
Rostock					'69 Winckel		
					'74 Spiegelberg		
Breslau							
Prague	'53 Scanzoni	Seyfert	Breisky				
Vienna	Klein		'61 Braun	'64 Späth	Braun		
Pest	'55 Birly	'55 Semmelweis	'65 Walla		Fleischer		
	'51 Semmelweis		'65 Dreschen		Kezmarszky		

NEGLECTED EVIDENCE IN THE HISTORY OF PHLOGISTON TOGETHER WITH OBSERVATIONS ON THE DOCTRINE OF FORMS AND THE HISTORY OF ALCHEMY

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THE overthrow of the phlogiston doctrine which had dominated chemistry for nearly a century constituted the "chemical revolution," about contemporary with the French and American revolutions, and marked the beginning of the science as we have it today. Its vogue, curiously enough, covered almost precisely the same period which intervened between the time that Robert Boyle put forward his new definition of element (and it is still the current definition) and the time that Lavoisier put Boyle's definition to practical use in the interpretation of experimental findings.

The doctrine of phlogiston was propounded by Georg Ernst Stahl in the first decade of the eighteenth century, a development of the views of Johann Joachim Becher which had been published about thirty years before. Each of these men considered matter to be composed of three principles corresponding to the salt, sulphur, and mercury of the alchemists, but the *terra pinguis* of Becher and the phlogiston of Stahl were offered as more adequately descriptive of the principle which the alchemists knew as sulphur. It seems clear that the doctrine of Stahl was a doctrine of forms, his three principles were principles for the description of substances. When they were treated as principles of constitution the doctrine collapsed.

Before the birth of Becher phlogiston had been suggested as the essential form of the sulphur of the Hermetic philosophers. It had been invoked as an argument against one who wished to regard the alchemical sulphur and mercury as real substances out of which the metals were compounded. The use of the word phlogiston in this connection may perhaps have been the cue for the doctrine of Stahl; in any case, the essence of his doctrine had been written down nearly a century before his time. The present paper is devoted to this early appearance of phlogiston.

From earliest times the mind of man has grasped tangible and formulated intangible Nature by means of two opposite qualities and a third by which the opposites are mediated, reconciled and included. The notion of the Trinity, Father, Son and Godhead, representing active, passive and spirit, respectively, antedates history. The Egyptian ankh, the symbol of life, is a combination of male and female. By slight modification it became the cross, still the symbol of life, upon which, before Christianity, the irony of the Jews saw fit to nail their criminals until they were dead. Nor has the human mind yet finished with this sort of thinking. The metaphysics of Hegel and Royce are evidences of it, as is the Langmuir atom from which electrons take their being and in which positive and negative are neutralized.

The Greeks thought it possible to describe all material objects in terms of two pairs of contrary qualities, hot and cold, wet and dry, each pair having a positive term and each a negative. By combination of the contraries, the four elements or principles (for the description) of matter were produced. Fire was warm and dry, air warm and moist, water cold and moist, and earth cold and dry. Fire and air were essentially positive and active, water and earth were negative and passive. Each of the positive elements was the contrary of a negative one; fire was contrary to water and air was contrary to earth. The four elements were the forms in which matter was manifested, and matter itself was the universal substratum, physical and metaphysical, by which the qualities of the elements were embodied.

Matter was the fifth term for the mediation of the two pairs of opposite elements, the higher synthesis, the *quinta essentia*, the *logos*, the *spiritus mundi*, material and immaterial alike, the final background of everything.

> Let us therefore say that the mother, or receptacle of every visible, nay of every sensible production, is neither earth, nor air, nor fire, nor water, nor any of the things which arise out of these, nor out of which these arise, but a certain invisible and formless being, the universal recipient, concerning which being, if we say that it is in a very dubious way intelligible, and something most hard to be apprehended, we shall not speak false.[1]
>
> Those who have investigated matter, if they have formed any right conception of it, have agreed in considering it as the subject and receptacle of forms.[2]
>
> Matter of itself is devoid of form, matter is the subject of all things.[3]
>
> For all things exist in it potentially before they are made, but actually after they are made and have received their nature. In order that there should be generation, it is necessary that there should be some one substance as a substratum. In the second place there are the contraries, in order that there may be changes and transmutations, the primary matter undergoing passion and affection, in order that the qualities or powers, being mutually passive, may not destroy, nor be destroyed, by one another. These are heat and cold, moisture and dryness. In the third place are those substances in which these powers reside, namely, fire and water, air and earth . . . . Of these four, heat and cold are causes, and active; but dryness and humidity are as the materials, and passive.[4]
>
> The physical philosophers analyze any substance, as, for example, a man, into head, hands, and feet; and these into bones, flesh, and nerves; and these into the four elements; and these again into matter and form.[5]
>
> The first principles are air, fire, water, and earth, for from them are formed all living things and the productions of the earth: they are therefore called elements; of these, air and fire have the power of moving and forming, the others (I mean water and earth) of receiving or suffering. Besides these, Aristotle thought that there is a fifth element from which the stars and the souls of individuals are made.[6]

Although the Stoics were especially interested by the fact that all things could be described in terms of active and passive, the Platonists by the universal substratum, and other schools by one or another particular aspect of the situation, yet all of the Greek philosophers seem to have been agreed upon the four contraries and the four elements as a basis for the immediate description of Nature. Their way of looking at things continued to be a standard until the end of the period of alchemy.

Its currency in Queen Elizabeth's time is evident from the writing of Edward Kelly in "The Stone of the Philosophers."[7]

> Chaos contains within itself the four elements of all that is, viz., fire, air, water, and earth, by the mixture and motion of which the forms of all earthly things are impressed upon their subjects.
>
> These elements have four qualities: heat, coldness, humidity, dryness. The first inheres in fire, the second in water, the third in air, the fourth in earth.
>
> By means of these qualities, the elements act upon each other, and motion takes place.
>
> Elements either act upon each other, or are acted on, and are called either active or passive.
>
> Active elements are those which, in a compound, impress upon the passive a certain specific character, according to the strength and extent of their motion. These are water and fire.
>
> The passive elements, earth and air, are those which by their inactive qualities readily receive the impressions of the aforesaid active elements.

Gases were considered forms of air as shown by the classical researches of Priestley on the new gases which he had discovered, published, beginning in 1775, under the title "Experiments and Observations on Different Kinds of Air." Liquids were forms of water, aqua vitae (*eau de vie*) aqua fortis, etc. The Aristotelian doctrine of the four elements had much to commend it. It offered a realistic description of natural phenomena and it could be expounded clearly and simply by words or by diagrams.

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[1] Plato. Timaeus. This and the quotations immediately following are the translation of Francis Adams in "The Genuine Works of Hippocrates," I, 133 *et seq.*, Lond., 1849.

[2] Plotinus. Ennead, II, 4.

[3] Proclus. Inst. Theol., 72.

[4] Ocellus Lucanus. On the Universe.

[5] Ammonius. Comment. in Porphyr., Introd.

[6] Cicero. Quaed. Acad. I, 7.

[7] The Alchemical Writings of Edward Kelly, translated by A. E. Waite from the Hamburg edition of 1676, Lond., 1893, p. 8.

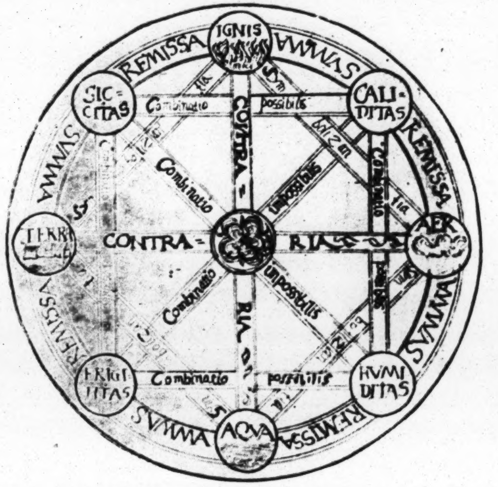

Fig. 1. An Exceptionally Fine Cross of Contraries Faces the Title Page of Leibnitz' "Dissertatio de Arte Combinatoriae." Lipsiae, 1666.

Boyle's Aristotelian says:[8]

> For if you but consider a piece of green wood burning in a chimney, you will readily discern in the disbanded parts of it the four elements, of which we teach it and other mixt bodies to be composed. The fire discovers itself in the flame by its own light; the smoake, by ascending to the top of the chimney, and there readily vanishing into air, like a river losing itself in the sea, sufficiently manifests to what element it belongs and gladly returnes. The water in its own form boiling and hissing at the ends of the burning wood betrays itself to more than one of our senses; and the ashes by their weight, their firiness, and their dryness, put it past doubt that they belong to the element of earth.

He apologizes "for building upon such an obvious and easie analysis," for the truth seems perfectly evident to him. If he wishes to describe things in terms of their forms, there is nothing to be said to the contrary. When Raymond Lully says that gold contains the four elements, but that silver contains only three, being deficient in fire, we may not fancy his use of words but we cannot deny the truth of his statement. The men who used the doctrine of forms were not misguided and ignorant, but were intelligent observers accurate in their language. If we grant them their vocabulary, they were commonly right.

Side by side with the doctrine of the four elements another doctrine of forms appears to have been current from earliest times: the doctrine of the alchemical principles, sulphur and mercury, and later of the three principles, sulphur, mercury, and salt. These were principles of constitution in the same way that intellect, will, and so on, are principles of the constitution of man. They were not substances out of which things were compounded, and the alchemist who believed that the metals were made up of the principles sulphur and mercury, did not hold that they were composed of mercury sulphide. The principles obviously must not be confounded with the materials of the same names bought in shops.

Sulphur was the principle which embodied the positive and active elements and qualities, aggressive, hot, combustible, volatile, and wet, while mercury embodied the passive qualities and was dry, earthy, incombustible, and fixed. These two principles seem to have sufficed for the thinking of the alchemists until about the time of Paracelsus when the inevitable neutral third came in, salt, the principle of corporification. Sulphur, mercury, and salt were active, passive, and substance. The third, brought the active and the passive to equilibrium.

A medieval alchemist writes:[9]

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[8] Robert Boyle. The Skeptical Chymist, first printed in 1661. Everyman's ed., p. 21.

[9] Roger Bacon. Speculum Alchemiae, pp. 208–219, in the volume Alchemiae Gebri Arabis, Nurembergen, 1545. The same tract is printed as Roger Bacon's in Zetzner: Theatrum Chemicum, Ursellis, 1602, II, 433–442, and in a later edition, Argentorati, 1659, II, 377–385. The French version at hand is Jean de Mehun: Le Miroir d'Alquimie, Paris, 1613. The authorship is therefore uncertain.

First, however, it ought to be understood that the mineral principles in the mine are Quicksilver and Sulphur. The complex metals and all the other mineral substances, of which the varieties are many and diverse, are procreated from these. I say that Nature always sets before herself as an object the perfection of gold and strives for it, but various supervening accidents transform the metals, as is set forth plainly in many books of the philosophers. For pure and impure metals are generated according to the purity or impurity of the prime two, that is, of the Quicksilver and Sulphur, and we have gold, silver, tin, lead, copper, and iron, concerning the nature of which, that is, concerning their purity and impurity or unclean superfluity and defect, the following may be accepted as true.

Gold is a certain perfect substance generated from pure, fixed, bright and reddish quicksilver and from clean, fixed, reddish, and incombustible sulphur, and it has no defect.

Silver is a clean substance, pure, almost-perfect, procreated from a pure, nearly-fixed, bright, and white quicksilver and from a like sulphur. It lacks a little fixation, and is deficient in color and weight.

Tin is a clean but imperfect substance, procreated from a quicksilver which is pure, fixed and not-fixed, bright, white in its manifest properties and reddish in those which are hidden, and from a like sulphur. Only decoction and digestion are wanting to it.

Lead is an unclean and imperfect substance, procreated from impure, non-fixed, earthy, feculent quicksilver, more or less white in its manifest and reddish in its occult properties, and from a similar partially-combustible sulphur. It is defective in purity, fixity, color, and in its comportment toward fire.

Copper is an unclean and imperfect substance, generated from an impure, non-fixed, terrestrial quicksilver, which is combustible and reddish but not bright, and from a sulphur of a similar kind. It is deficient in fixity, purity, and weight, and it has an excessive amount of impure color and incombustible earthiness.

Iron is an unclean and imperfect substance, generated from an impure quicksilver, exceedingly fixed, earthy, and combustible, white and red, but not bright, and from a like sulphur. It lacks fusibility, purity, and weight, and it has a remarkable amount of unclean fixed sulphur and combustible earthiness.

It is evident that the alchemist with his sulphur and mercury has succeeded in giving a fairly clear and accurate notion of the properties of the metals. In the same way, many of the phenomena of nature were described by the alchemists in a fashion which is perfectly intelligible once we understand their vocabulary. Concerning the success of such descriptions Sir Thomas Browne writes:[10]

> The Chymists have attempted laudably, reducing their causes unto Sal, Sulphur, and Mercury; and had they made it out so well in this (the matter of color), as in the objects of smell and taste, their endeavors had been more acceptable: For whereas they refer Sapor unto Salt, and Odor unto Sulphur, they vary much concerning colour; some reducing it unto Mercury, some to Sulphur, others unto Salt; wherein indeed the last conceit doth not oppresse the former, and Salt may carry a strong concurrence therein. For beside the fixed and terrestrious Salt, there is in naturall bodies a Sal niter referring unto Sulphur, there is also a volatile or Armoniac Salt, retaining unto Mercury; by which salts the colours of bodies are sensibly qualified, and receive degrees of lustre or obscurity, superficialitý or profundity, fixation or volatility.

When Sendivogius says that the three principles are produced from the four elements, he is no doubt correct in his epistemology, but his description of the genesis of them is fanciful. His observations on the history of the third principle, salt, may probably be taken as sound.

> According to the opinion of the Ancients, there are only two principles of natural things, particularly of the metals, to wit, Sulphur and Mercury. The moderns on the contrary admit three: Salt, Sulphur, and Mercury, which are produced from the four Elements.[11]
>
> Fire began to act upon Air, and from this action Sulphur was produced. Air likewise began to act upon Water, and this action produced Mercury. Water also began to act upon

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[10] Browne, Sir T. Pseudodoxia Epidemica. Book VI, 322. Lond., 1646.

[11] Sendivogius. Cosmopolite ou Nouvelle Lumière Chimique, Paris, 1723, p. 138.

Earth, and Salt was produced from this action. But Earth, not finding any other element upon which it could act, was not able to produce anything, but retained in its breast what the three other elements had produced. This is the reason that there are only three Principles and that the Earth remains the womb and the nurse of the other three elements.[12]

Salt is the third Principle of all things, of which the ancient Philosophers have not spoken. It has been explained to us best and its application has been shown by J. Isaac Hollandus, Basil Valentine, and Theophrastus Paracelsus. . . . It is this in particular which is a third being, which gives beginning to the metals, which contains in itself the two other principles, namely Mercury and Sulphur, and which in its birth has for mother only the impression of Saturn which restrains it and renders it compact, the principle from which the substance of all the metals is formed.[13]

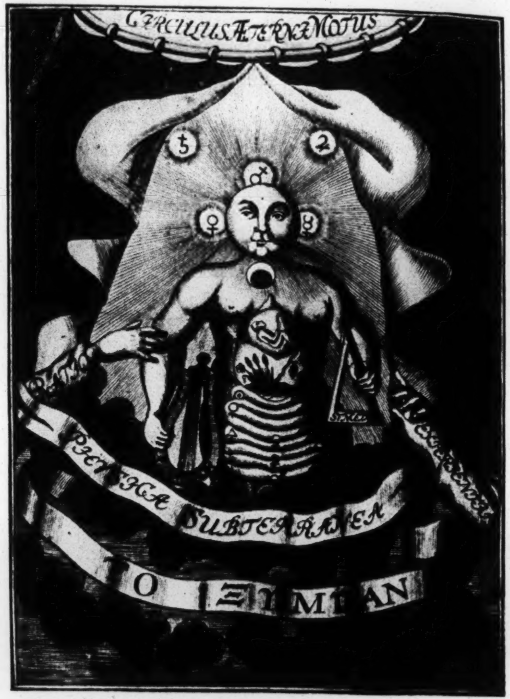

FIG. 2. FRONTISPIECE OF "PHYSICA SUBTERRANEA." REASON AND EXPERIENCE DRAW ASIDE THE VEIL THAT CONCEALS THE WONDERS OF NATURE.

Certain of the metals, lead and tin in particular, are readily oxidized or calcined and the statement that they contain the principle of sulphur is only another way of saying that they are combustible. It is not so easy to understand how gold can also contain this principle and remain unaltered in the strongest fire. To obviate objections of this sort the doctrines of Becher and of Stahl seem to have been devised. The belief is given strong support by the title of the work in which Stahl elaborates his phlogiston doctrine, "Zufällige Gedanken und nützliche Bedenken über den Streit von den sogenanten Sulphure, und zwar sowohl dem gemeinen verbrennlichen oder flüctigen, als unverbrennlichen oder fixen."[14] (Various thoughts and useful meditations upon the controversy about the so-called sulphur, both upon that which is combustible and volatile and upon that which is incombustible and fixed.)

Becher (1635–1682) considered metals and mineral substances in general to be composed of three principles or earths, the first of which was vitrifiable and transparent, the second was fiery and combustible and the third subtle, volatile, and mercurial in its nature. That these three were intended to correspond to the salt, sulphur, and mercury of the alchemists is manifest from certain of the chapter headings of Becher's "Physica Subterranea,"[15] especially "Concerning the First Principle of Metals and of Stones, which is a fusile stone or stony earth,[16] improperly called Salt," "Concerning the Second Principle of Minerals, which is *terra pinguis*, improperly called Sulphur" and "Concerning the Third Principle of

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[12] *Op. cit.*, p. 181.

[13] *Op. cit.*, pp. 249–250.

[14] A rare book published at Halle, 1717. Compare Hoefer: Histoire de la Chimie, II, 397.

[15] Frankfort, 8vo., 1669 and 1681, and Leipz., 4to., edited by Stahl, 1702, 1703, and 1738. The edition of 1738 contains, with separate pagination, Stahl's "Specimen Beccherianum, Sistens Fundamenta, Experimenta, etc." The quoted titles are *Lib.* I, *Sect.* III, *Cap.* ii, iii, iv, pp. 61, 66, 76.

[16] Becher evidently uses the word earth as a general term, for he says, (*op. cit.*, p. 272): "Terra in genere est sicca, aqua est terra fluida, aër terra subtilis, ignis est terra rarefacta."

Minerals, which is a fluid earth, improperly called Mercury."

In his commentary on the doctrine of Becher, Stahl (1660–1734) writes:[17]

> Briefly, fire, flaming, fervid, and hot, is involved in the act of mixtion, as an instrument, and it is of very great importance. It is involved in the very substance of the mixt, as an ingredient (as common speech has it), as a material principle and constitutive part of the whole composition, the material and principle of fire, itself not fire. I propose to call this Phlogiston, namely, the prime ignescible Principle which is directly and eminently fitted for taking the Heat and for supporting it. So, in fact, in any mixt it is combined with the other principles.

In the "Zufällige Gedanken," Stahl[18] calls it *das verbrennliche Wesen* and says that the *Schwefel-Principium* is most proper to produce igneous movement and to serve for the substratum of fire in all the phenomena of combustion.

None of the histories of chemistry contains any reference to phlogiston before the time of Stahl, and all are agreed that Stahl's phlogiston was derived from the *terra pinguis* of Becher. It is interesting to find that phlogiston had been used in 1606, twenty-nine years before the birth of Becher and fifty-four before the birth of Stahl. It had been named as an essential property of the sulphur principle, and had been used for the explanation of the fact that metals did not burn. It had been invoked precisely for a discussion of the sulphur which is non-volatile and fixed. Its early use was an anticipation or strong forecasting of the doctrine of Stahl. Whether it was the source of that doctrine, who can say?

In the year 1606 Hapelius published[19] his "Disquisition on the Transformation of the Metals" in refutation of the opinions of the Jesuits Hagelius and Pererius. He quotes the argument of Pererius that if gold and silver are compounded from sulphur and mercury, then sulphur and mercury ought to be found in the mines along with silver and gold, and silver and gold ought to be found where sulphur and mercury occur. Pererius thinks that the notion of these principles is false and that gold made from mercury and sulphur is not true gold: he takes the principles to be real substances, and his argument is of the kind by which the phlogiston doctrine finally was overthrown.

Hapelius regards the principles as forms, and argues:

> We believe that we have already shown this hypothesis (*sic*) of the principles which compose the metals to be adequate and more than adequate, although it is denied flatly by the Jesuit Pererius and is discounted by the effection and generation of true natural gold by chemical means. . . . "The metals," they say, "do not have the properties of sulphur and of quicksilver." "How so?" I beseech them, and they reply that nothing takes the flame more readily than sulphur, and that the metals moreover are not φλογιστὰ. That is ridiculous: for the sulphur in the metals attains a certain fixity so that in the imperfect metals a certain sulphur evapo-

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[17] Spec. Becch., p. 19.

[18] Quoted by Hoefer, *op. cit.*, II, 398.

[19] Kopp, Die Alchemie in älterer und neuerer Zeit, I, 251, reports the publication at Marburg in 1606 of the "Nova disquisitio de Helia Artista Theophrasteo: in qua de metallorum transformatione adversus Hagelii et Pererii Jesuitarum opiniones evidenter et solide disseritur." In the dedication to the Landgraf von Hessen-Kassel the author calls himself Heliophilus a Percis. The work was published in German in 1772 in the first volume of Schröder's "Neuer alchymistischer Bibliothek" under the title "Elias der Artist, eine Abhandlung von der künstlichen Metallverwandlung." The versions which I have seen are those of the "Theatrum chemicum," Argentorati, 1613, Vol. IV, the preface (page 241) headed "Philochemicus Heliophilus A Percis Philochemicus. S.," and (page 247) the "Nova disquisitio de Helia Artista Theophrasteo, super metallorum transformatione, etc. auctore Heliophilo A Percis Philochemico," and again (page 326) the preface headed "Philochemicis Heliophilis Heliophilus Philochemicis, Nicholaus Niger Hapelius, Anagramatizomenos, S." and (page 337) the "Disquisitio Heliana, de metallorum transformatione, etc." Each version with its preface covers about forty pages, and the two appear to be identical except for occasional sentences which occur in one and not in the other. The long translated passage is printed on page 262 and on page 352 of the same volume.

rates with the crudity of Mercury, even though it may not be inflammable, while in the perfect metals however the *hydragyron* has fixed it so securely that it neither evaporates nor is burned.

In order that the matter may be better understood, it must be known that τὸ φλογιστὸν is something proper to all sulphur, the essence of that sulphur which is ingrafted in all things. But it is not always specific to it. It may also certainly be fixed, whether perfectly or imperfectly. If imperfectly fixed and immixed in the substance, it does not burn, although it evaporates in the fire. If it is perfectly fixed it remains. And for this reason the perfection or imperfection of metals is best examined by their evaporation or permanence in the fire.

Antimony which is fixed, although not malleable, but friable and fusile, furnishes extraordinary evidence of this thing. For its sulphur which the quicksilver has congealed in an earthy mass (the substance remains even after reverberation) does not inflame but evaporates inwardly with the Mercury in the fire, the two being joined together in a natural mass. Moreover, if sulphur is elicited from Antimony by extraction, it is found to be common sulphur and hence it is φλογιστὸν. I do not speak here of the red sulphur[20] (*de rubidine*) which chemists extract but of true natural green brimstone (*de vero naturali sulphure sub viridi*).

You will test this by the evidence. Take of alum and sal niter as much as suffices and make aqua valens or common aqua fortis as it is usually called. To this add one half its weight of baked salt. Grind Antimony[21] very fine and add the triturated Antimony to this liquid in small portions at a time using such a quantity that the liquid stands four fingers deep on top of it. Make the addition gradually in order that the liquid may not effervesce immoderately. When the liquid in the phial takes on a greenness from the precipitation of finely divided sulphur, pour it out immediately. When this is mixed with common tepid water, sulphur will settle out, common green brimstone, which *ipso facto* you will find to be φλογιστὸν and you will find that it does not differ from common sulphur in that respect.

Comment on the foregoing extract seems almost superfluous. Hapelius said that τὸ φλσγιστὸν is the essence of that sulphur which is ingrafted in all things and Stahl later found it more convenient to call the principle phlogiston instead of sulphur.

Hapelius performed an experiment by which he isolated a combustible substance from antimony, and inferred with all propriety that the mineral contained the principle of sulphur. Stahl would have said that the antimony contained phlogiston. Stahl did say with perfect propriety that ordinary sulphur, or brimstone, consists of a combination of phlogiston with an acid. The fact that sulphur is a simple substance did not concern the alchemists who made use of the doctrine of forms, for sulphur is combustible and an acid results from the combustion. It is perfectly true in terms of the doctrine of forms that tin and lead consist of phlogiston in combination with a calx. They are easily oxidized and the oxides are heavy earthy materials.

For Stahl phlogiston was a form. Later chemists began to think of it as a definite substance. They began to dream of its isolation and to speculate concerning its physical properties. Subtly and surely the definition of element which Robert Boyle had put forward[22] in 1677 took its place in the thinking of chemical investigators.

> I now mean by elements, as those chymists that speak plainest do by their principles, certain primitive and simple, or perfectly unmingled bodies; which not being made of any other bodies, or of one another, are the ingredients of which all those called perfectly mixed bodies are immediately compounded, and into which they are ultimately resolved: now whether there be any one such body to be constantly met with in all, and each, of those that are said to be elemented bodies, is the thing I now question.

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[20] Sulphur *de rubidine*, the powder of projection or philosophers' stone by which base metals are transmuted into gold.

[21] The antimony of course is stibnite, black antimony sulphide. On treatment with a mixture of nitric acid and salt, its sulphur is liberated as such. This experiment is not in Basil Valentine's "Currus Triumphalis Antimonii."

[22] *Op. cit.*, p. 187.

Some considered charcoal to be practically pure phlogiston for it burned to leave but little ash. The observation that the calx of tin or of lead weighed more than the metal from which it had been prepared offered no objection to the mind of one who was addicted to the doctrine of forms, for the idea of fire was associated with the idea of levity, but the phenomenon was difficult to interpret by those who regarded phlogiston as a substance. When Cavendish discovered hydrogen in 1766, he thought that he had prepared pure phlogiston, for his gas resulted from the action of an acid upon a metal and was produced along with the same salt which was formed (without gas) by the action of the acid on the calx. Moreover, the gas reacted with the calx to regenerate the metal. The fact that water was formed at the same time offered serious difficulties. Priestley discovered oxygen in 1774 and named it "dephlogisticated air." When Cavendish in 1783 mixed this gas with his phlogiston, exploded the mixture by means of an electric spark, and showed that water was produced, the phlogiston doctrine was shown to be utterly inadequate for the interpretation of substance. Lavoisier established the doctrine of substance by his brilliant quantitative researches in establishing the criterion for its application, namely, measurement by weight. By 1785, the phlogiston doctrine had been abandoned. The new chemistry, with its new way of looking at things, with its elements which were elementary substances, had come in.

The phlogiston doctrine collapsed, not because it was false, but because it had ceased to be useful and interesting. Men had lost their interest in forms, for they found them insufficient for the interpretation of significant phenomena.

AN UNPUBLISHED LETTER OF SIR THOMAS BROWNE*

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NEW YORK, N. Y.

SPECIMENS of Sir Thomas Browne's handwriting in private hands must be scarce. I gather this from the fact that the manuscript reproduced here is the first that a rather close watch has discovered in any catalogue in over twenty years. There is, furthermore, an excellent reason why they will never be common. The vast majority of Browne's writings are safely immured in the British Museum, in the form of twenty-three bound volumes. This was bequeathed to it by Sir Hans Sloane who obtained them by purchase upon the death of Sir Thomas' grandson in 1710. The only form of his handwriting that might still be possible to obtain must, therefore, be in letters written by Browne to one of his correspondents. Such letters are fairly numerous and fill part of one of the three volumes of Browne's works published in the Wilkin Edition of 1836.

This manuscript is indeed such a letter, but it is not found in any of the editions of Sir Thomas Browne's works. Strangely enough, however, a hiatus is found in his published correspondence, into which this letter accurately fits.

On October 4, 1658, Sir William Dugdale, an eminent antiquarian in Warwickshire, writes to Sir Thomas promising to send the bones of a fish found "in the digging of a pond at Conington Downe." "Certainly, sir," he says, "the gaining of Marshland in Norfolke and Holland in Lincolnshire, was a worke very antient, as by many circumstances may be gathered; and therefore considering the industry and skill of the Romans, I conceive it most like to have been performed by them." He then quotes Tacitus, who used the expression *paludibus emuniendis* in describing one of the activities of the Romans in Britain and he asks Browne "whether the word *emuniendis* do not meane walling or banking." On November 9, 1658, Dugdale writes again, telling Browne of the finding of urns on an island apparently reclaimed from the fens of Soham near Ely. The fish has not been sent, because he is waiting for his friend, Sir Thomas Cotton, to take it to Browne. On December 6, 1658, Browne writes a long letter to Dugdale containing a scholarly exegesis of the word *emuniendis*, which Sir Thomas interprets in the broader sense of pioneering, that is, making fens and marshes habitable, "to procure the securement against floods and inundations." Dugdale replies on November 17, 1658, thanking Browne for his discourse on the word *emunire*. At the end of this letter, Dugdale writes: "And lastly, if at your leisure, through your vast reading, you can point out what authors do speak of those improvements which have been made by banking and drayning in Italy, France or any part of the Netherlands, you will do me a very high favor."

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* Read before the Historical Section, New York Academy of Medicine, January 31, 1924.

On December 6, 1658, which was a Monday, Browne promises to send instances and examples of draining in the four parts of the earth on Friday next. This manuscript letter, which is dated December 11th, a Saturday, is Browne's reply. Writing on the 24th of February, 1659, Dugdale thanks him "for what you sent me from your learned observations touching the banking and drayning in other foreign parts."

Dugdale evidently thought much of Browne's information, for in his book "The History of Embanking and Draining in Divers Fenns and Marshes" published in 1662, Dugdale refers repeatedly to some of the contents of this letter. I have found in this work Browne's comments, in somewhat altered form, on Babylon, Semarimis and Mitocris, Acharnania, Placentia and the Fucine Lake. The sentence in this manuscript referring to Mexico is copied verbatim in Dugdale's book. Dugdale indeed acknowledged Browne's services in his preface, as he says that he has "received much direction for my better guidance in this present work."

All this proves that this letter represents an actual product of Sir Thomas' mind.

Study of the manuscript revealed a curious thing. The text of the letter was written in a different hand and in a lighter ink than the postscript, marginal notes and signature. Moreover, an extra portion of manuscript pasted at the side of the last page (Fig. 5) was in an entirely different hand from the text and was identical in form and texture of ink with both the corrections in the text and the postscript. I concluded, therefore, that the main bulk of the letter had been written by Browne's secretary or amanuensis and that the only specimens of Browne's handwriting present in this manuscript consisted in the addendum, the corrections in the text, some of the marginal notes, the postscript and signature.

Comparison with a proven specimen of Browne's handwriting was difficult, because as far as could be ascertained, no other manuscript of Browne's is known to exist in this country. Luckily, I found a facsimile of Browne's will in the Wilkin Edition of 1836, which is here reproduced (Fig. 6). It is plain that the handwriting in both is identical.

One cannot help commenting upon the remarkable legibility of Browne's hand. It seems remarkable that only a few years after Shakespeare's death, handwritings should have undertaken such extraordinary changes for the better, from the disjointed, badly executed scrawls so familiar in Elizabethan manuscripts to the smooth, flowing characters found in this manuscript.

The letter reveals all the familiar swing, the "musical color" and "crumbling cadences" of Browne's prose, and his fondness for sesquipedalian words of Latin breed. Dealing with hard facts, he has little opportunity to wield the magic of his curious fancy. It also affords another evidence of Browne's twist of mind and his weakness for things in the distant realms of knowledge.

How and through what hands in these long years, this manuscript passed from Browne's to mine would, if known, make an interesting story. At all events, it is here reproduced, and little did Sir Thomas divine or foresee that this, a fleeting product of his brain, would some day be in the America, where "the huntsmen are up," the pride and sport of bibliomaniacs.

Transcript of Letter (Figs. 1–4)

Sir:

Your conjecture is very probable that the Romans while they possessed this land, did not omitt good care, & paines about this large tract of the fennes. The ancient Britons who lived much by pasture, & would not tast of fish, had good inducement to cleare their grounds of water: yet how indisposed they were for workes of so high a nature, seemes probable from their insufficiencie in minor Arts; while abounding in milke, they had not the Artifice of cheese: And the speech of Boadicia plainly delivers, that they were not accustomed to till their grounds, but excercised themselves in warre.

But that such workes, & even in those parts, were not neglected by the Romans, beside the policie in imploying of the people, and the benefitt of themselves in improving their acquests, seemes also probable from experimentall encouragements in workes of like nature performed by that nation.

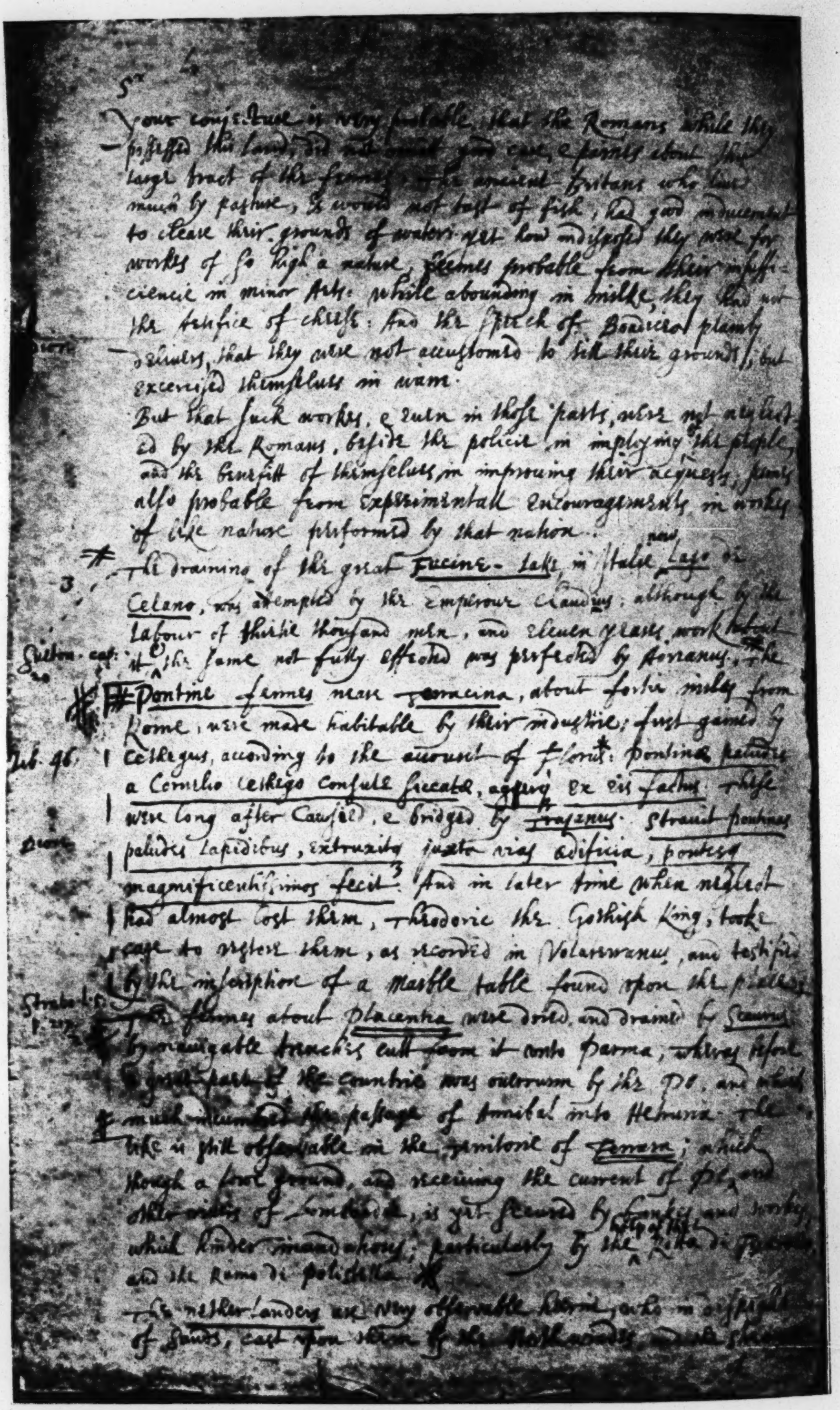
The draining of the great Fucine-Lake in Italie, now Lago de Celano, was attempted by the Emperour Claudius, although by the labour of thirtie thousand men, and eleven yeares work about it & the same not fully effected was perfected by Adrianus. The *Pontine fennes* neare Gerracina, about fortie miles from Rome, were made habitable by their industrie; first gained by Cethegus, according to the account of Florus: *pontina paludes a Cornelio Cethego consute* siccata, *agery ex eis factus*. These were long after causied & bridged by Trajanus. *Stravit pontinas paludes lapidibus, extruxita juxta vias adificia pontesa magnificentissimos fecit*. And in later time when neglect had almost lost them, Theodoric the Gothish King, tooke care to restore them, as recorded in Volaterranus, and testified by the inscription of a marble table found upon the place. The fennes about *Placentia* were dried and drained by *Scaurus* by navigable trenches cutt from it into Parma, wheras before a great part of the countrie was overrunn by the Po, and which much incumbred the passage of Annibal into Hetruria. The like is still observable in the territorie of *Ferrara;* which though a lowe ground, and receiving the current of Po and other rivers of Lombardie, is yet secured by bankes and workes, which hinder inundations; particularly by the help of the Rotta di Ficarollo, and the Ramo di Polistella.

The *Netherlanders* are very observable heerin, who in despight of sands, cast upon them by the north windes, and the streames of the Scheld, the Maze & Rheine, have ordered banks, and sluces to the security of their countrie; which seemes to have beene so much gained in *Brabant*, that they have left a faire, and drie habitation; wheras in the opinion of learned men the country hath beene sea, almost as farre as Gongerne.

Beside the old *fossa Mariana*, something of this nature seemes to have beene done about Arles, and the lower streames of Rhodanus or Le Rhosne, in that fenny & marish countrie. And the like may be conjectured about the entrance of *Danubuis into the Euxin* sea; while we read of a pseudostoma, or artificiall mouth, beside naturall ostiaries; and the same not only in Plinie, but in the mapp prefixed to Arrianus, and in that also of Bertius.

And beside what you finde in Natalis Comes, concerning *Acharnania*, the exiccation of meeres and fennes seemes to have beene not unknowne in Greece: since Aristotle so farr discourseth therof, that 3 observations may be deduced from him. That these cleared & dried places doe often returne unto their former state. That though in such places the ground comonly riseth, yet afterward it much sinketh. And that places thus dried have at first great fertilitie, wh afterwards they maintaine not. And makes instance in the Argine grounds which whether observed in marshes & pooles, artificially or naturally dryed, may fall into usefull consideration.

Great observations there are of this way in the fencings, bankings, slucings, & artificiall streames of *Nilus in Ægypt*, a country resembling this; wh though not a meere gained ground, as learned antiquitie apprehended, yet surely much recovered by the industrie of the inhabitants, wth sluces, new mouths and ostiaries, maintained wth noe small charge & labour, unto this day.



Sr

Your conjecture is very probable, that the Romans while they
possessed this land, did not omit good care & paines about this
large tract of the fennes; the ancient Britans who lived
much by pasture, & would not tast of fish, had good inducement
to cleare their grounds of waters: yet how indisposed they were for
works of so high a nature, seemes probable from their insuffi-
ciencie in minor Arts: while abounding in milke, they had not
the Artifice of cheese: And the speech of Boadicea plainly
Dion. delivers, that they were not accustomed to till their grounds; but
exercised themselves in warre.
But that such workes, & even in those parts, were not neglect-
ed by the Romans, beside the policie in imploying the people,
and the benefitt of themselves, in improving their acquests; seemes
also probable from experimentall encouragements in workes
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Sueton. cap. 20 it, the same not fully effected was perfected by Adrianus. The
Pontine fennes neare Terracina, about fortie miles from
Rome, were made habitable by their industrie; first gained by
Lib. 46. Cethegus, according to the account of Florus: Pontinae paludes
a Cornelio Cethego Consule siccatae, agerq ex eis factus. These
were long after causied, & bridged by Trajanus. Stravit pontinas
Dion. paludes lapidibus, extruxitq juxta vias aedificia, pontesq
magnificentissimos fecit. And in later time when neglect
had almost lost them, Theodoric the Gothish King, tooke
care to restore them, as recorded in Volaterranus, and testified
by the inscription of a marble table found upon the place.
Strabo l. 5. p. 217. The fennes about Placentia were dried and drained by Scaurus
by navigable trenches cutt from it unto Parma, whereas before
a great part of the countrie was overrunn by the Po, and which
much incumbred the passage of Annibal into Hetruria. The
like is still observable in the territorie of Ferrara; which
though a low ground, and receiving the current of Po, and
other waters of Lombardie, is yet secured by bankes and workes
which hinder inundations; particularly by the help of the Zeta di Ferrara
and the Ramo di Polisella.
The Netherlanders are very observable herein, who in dispight
of sands, cast upon them by the Northwinds, make the [illegible]

Fig. 1. First Page of Sir Thomas Browne's Letter to Sir William Dugdale

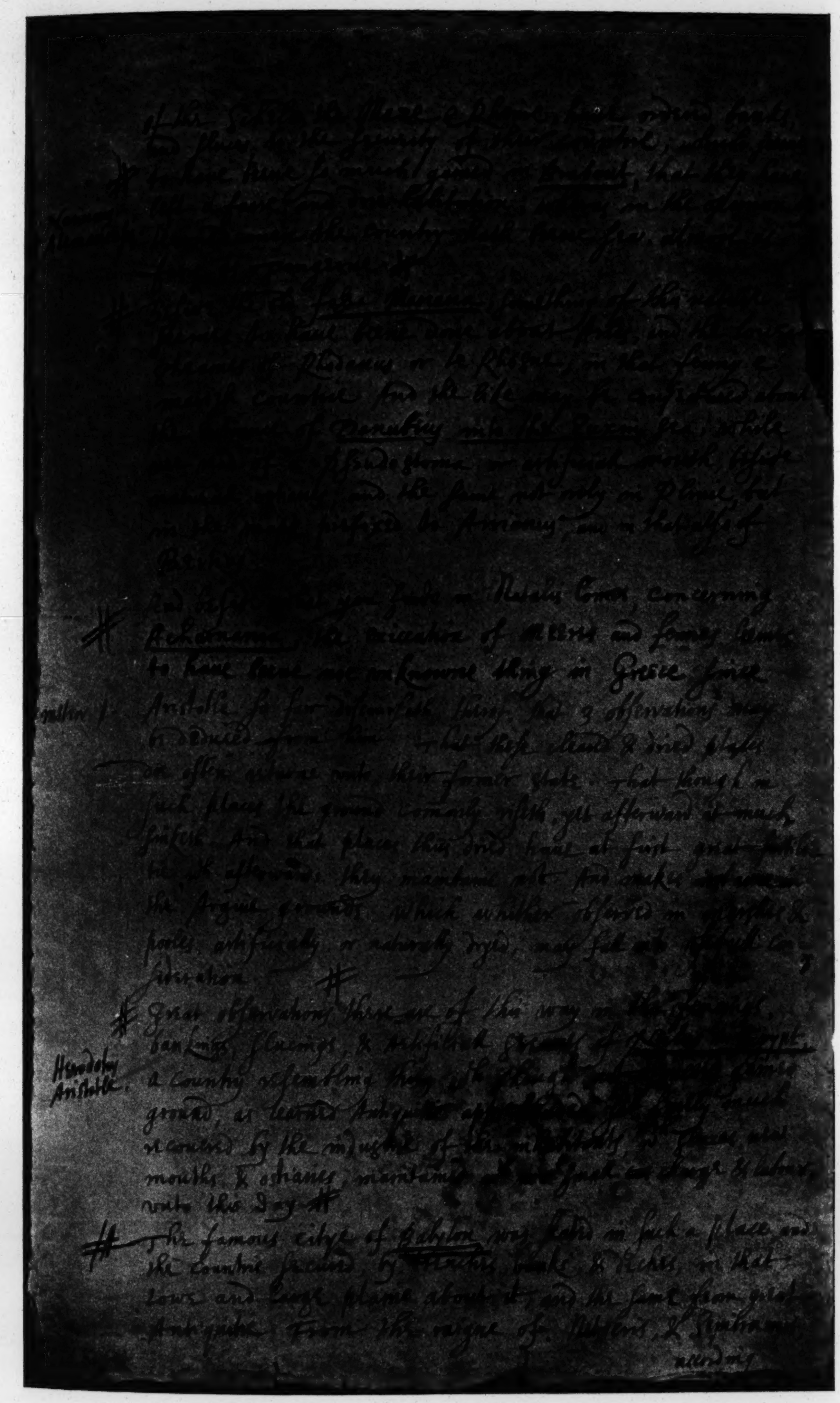
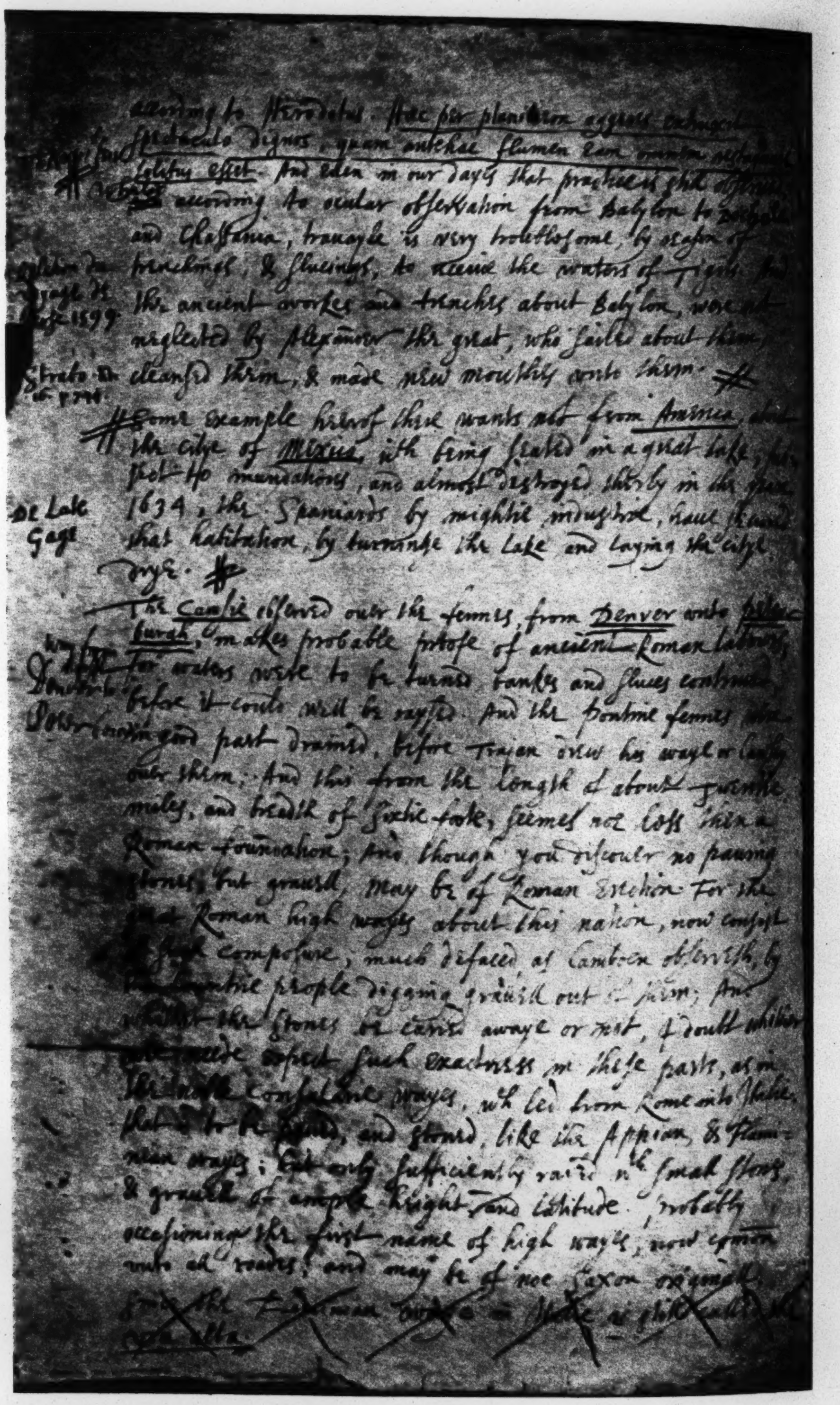


FIG. 2. SECOND PAGE OF SIR THOMAS BROWNE'S LETTER TO SIR WILLIAM DUGDALE



according to Herodotus. Hac per planitiem aggestis [illegible] spectaculo dignos, quum antehac flumen cum omnem [illegible] solitum esset. And even in our dayes that practice is still observed according to ocular observation from Babylon to [illegible] and Chassania, travayle is very troublesome by reason of trenchings, & sluicings, to receive the waters of Tigris. And the ancient workes and trenches about Babylon, were not neglected by Alexander the great, who sailed about them, cleansed them, & made new mouthes unto them. #

Some example hereof there wants not from America, about the citye of Mexico, which being seated in a great lake, subject to inundations, and almost destroyed thereby in the yeare 1634, the Spaniards by mightie industrie, have secured that habitation, by turning the Lake and laying the citye drye.

The Cawsie observed over the fennes, from Denver unto Peterburgh, makes probable proofe of ancient Roman labours; for waters were to be turned, bankes and sluces contrived before it could well be raysed. And the Pontine fennes were in good part drained, before Trajan drew his wayes or cawsy over them. And this from the length of about twentie miles, and breadth of sixtie foote, seemes noe lesse than a Roman foundation; and though you discover no paving stones, but gravell, may be of Roman erection. For the great Roman high wayes about this nation, now consist of such composure, much defaced as Cambden observeth, by the countrie people digging gravell out of them; and whether the stones be carried away or not, I doubt whither wee neede expect such exactnesse in these parts, as in the noble consulare wayes, wch led from Rome into Italie, that is to be paved, and stoned, like the Appian, & Flaminian wayes; but only sufficiently raised wth small stones, & gravell of ample height and latitude, probably occasioning the first name of high wayes, now common unto all roades; and may be of noe Saxon originall. ~~from the [illegible] [illegible] in Italie [illegible] [illegible] alta~~

Texeira his [illegible]

[illegible] voyage 1599

Strabo lib. 16 p. 740

De Lake Gage

[illegible] Denver to Peter[illegible]

FIG. 3. THIRD PAGE OF SIR THOMAS BROWNE'S LETTER TO SIR WILLIAM DUGDALE

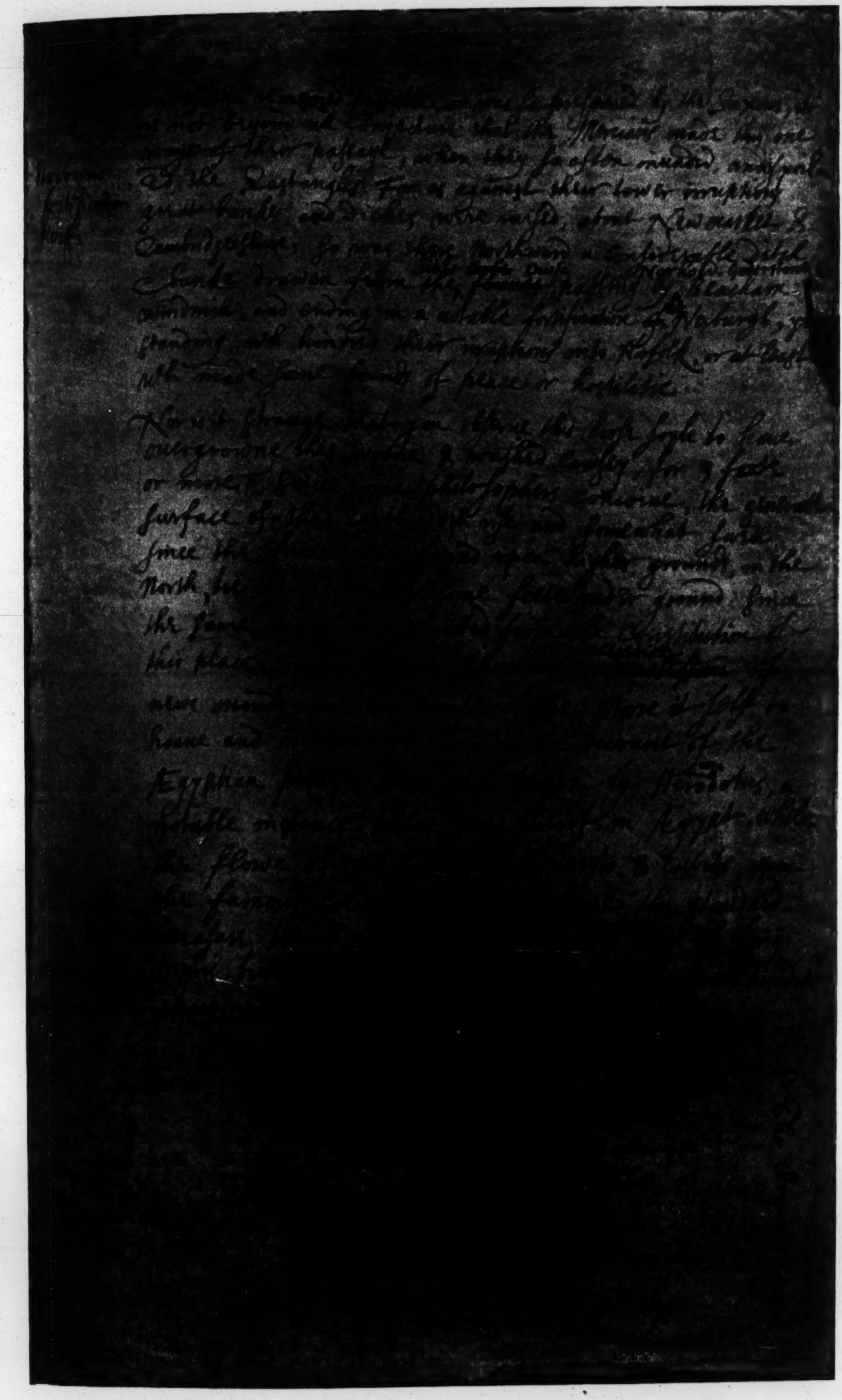
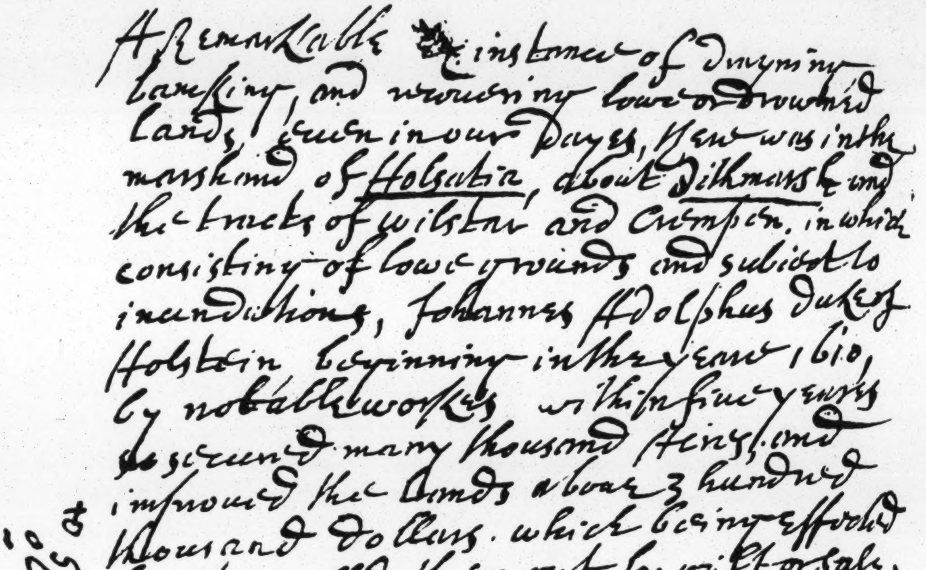


FIG. 4. FOURTH PAGE OF SIR THOMAS BROWNE'S LETTER TO SIR WILLIAM DUGDALE

The famous citye of *Babylon* was seated in such a place, and the countrie secured, by trenches, banks, & diches, in that lowe and large plaine about it; and the same from great Antiquitie. From the raigne of Nitocris, & Semiramis, according to Herodotus. *Hac per planitiem aggeres extruxit spectaculo dignos, quam antebac flumen eam omnem restagnare solitus esset*. And even in our dayes that practice is still observed, while according to ocular observation from Babylon to Doctrala and Chassania, travayle is very troublesome, by reason of trenchings, & slucings, to receive the waters of Tigris. And the ancient workes and trenches about Babylon, were not neglected by Alexander the great, who sailed about them, cleansed them, and made new mouthes unto them.



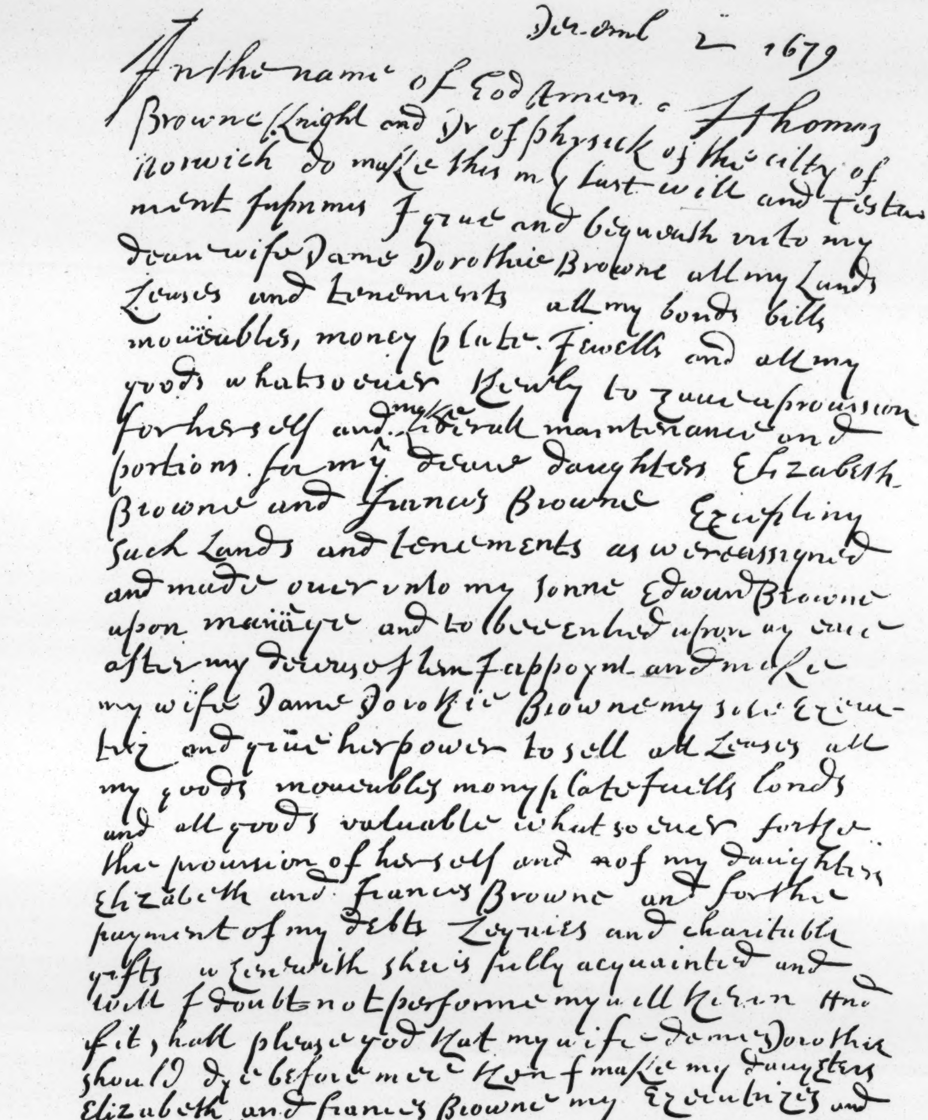
A Remarkable instance of draining banking, and recovering lowe or drowned lands, even in our dayes, there was in the marshland of Holsatia, about Ditmarsh and the tracts of Wilster and Crempen. in which consisting of lowe grounds and subiect to inundations, Johannes Adolphus duke of Holstein beginning in the yeare 1610, by notable workes within five yeares ~~se~~ secured many thousand acres, and improved the lands above 3 hundred thousand dollars. which being effected hee parcelld them out by gift or sale unto his subiects, reserving out of every proportion ~~about~~ Rent unto him self. Totum territorij subditis et amicis cessit, ea lege ut vel aggeribus cingeretur, vel ab aquis intestinis liberentur, et hinc quotannis celsitudinis suae aerario certus canon ~~numeratur~~ pro quolibet demato[x] numeretur. as stands delivered by a learned man of those parts

to Schoneveldeus in Ichthyologia. pag 47

x Every demetum containes 36 virgae in length and 6 in breadth and every virga 16 foote.

FIG. 5. ADDENDUM ATTACHED TO THE LAST PAGE OF LETTER WRITTEN ENTIRELY IN SIR THOMAS BROWNE'S HAND

Some example heerof there wants not from *America*, about the Citye of *Mexico*, wh being



Decemb 2 1679

In the name of God Amen. I Thomas
Browne Knight and Dr of Physick of the citty of
Norwich do make this my last will and testa
ment. Inprimis I give and bequeath unto my
deare wife Dame Dorothie Browne all my Lands
houses and tenements all my bonds bills
mouvables, money plate Jewells and all my
goods whatsoever freely to have a provision
for herself and make liberall maintenance and
portions for my deare daughters Elizabeth
Browne and Frances Browne Excepting
such Lands and tenements as were assigned
and made over unto my sonne Edward Browne
upon marriage and to bee entred upon by him
after my decease of him I appoynt and make
my wife Dame Dorothie Browne my sole Execu-
trix and give her power to sell all houses all
my goods mouvables mony plate Jewells bonds
and all goods valuable whatsoever for the
the provision of herself and of my daughters
Elizabeth and Frances Browne and for the
payment of my debts Legacies and charitable
gifts wherewith shee is fully acquainted and
will I doubt not performe my will herein. And
if it shall please God that my wife Dame Dorothie
should dye before mee then I make my daughters
Elizabeth and Frances Browne my Executrices and
give them the same enioyment and power in my estate
as I have before given unto my wife dame Dorothie.
This is my last will and testament which I have
writt with my owne hand and confirmed it with my
hand and seale.

witnesses

Chro: Bickerdike
Anthony Mingay.
Aug: Briggs Junior

Thomas Browne

FIG. 6. FACSIMILE OF SIR THOMAS BROWNE'S WILL, INSERTED IN THE WILKIN EDITION OF SIR THOMAS BROWNE'S WORKS, 1836

seated in a great lake, subject to inundations, and almost destroyed therby in the yeare 1634, the Spaniards by mightie industrie, have secured that habitation, by turninge the lake, and laying the citye drye.

The *Causie* observed over the fennes, from *Denver* into *Peterburgh*, makes probable proofe of ancient Roman labours; for waters were to be turned, bankes and sluces continued, before it could well be raysed. And the pontine fennes were in good part drained, before Trajan drew his waye or Causey over them. And this from the length of about twentie miles, and breadth of sixtie foote, seemes noe loss than a Roman foundation; And though you discover no paving stones, but gravell, may be of Roman erection. For the great Roman high wayes about this nation, now consist of such composure; much defaced, as Cambden observeth, by the countrie people digging gravell out of them; And whither the stones be caried awaye or not, I doubt whither wee neede expect such exactness in these parts, as in the noble consularie wayes, wh led from Rome into Italie: that is to be paved, and stoned, like the Appian, & Flaminian wayes; but only sufficiently raysed wth small stones, and gravell of ample height and latitude probably occasioning the first name of high wayes, now comon unto all roades; and may be of noe Saxon originall. And if this remained passable, or was so preserved by the Saxons, it is not beyond all conjecture that the Mercians made this one waye of their passage, when they so often invaded and spoiled the Eastangles. For as against their lower irruptions great bankes and diches were raised, about Newmarket & Cambridgeshire, so was there Northward a considerable ditch & banke drawen from the litle Owse, passing by Norhold, Goderstone, & Beacham windmill, and ending in a notable fortification at Nerburgh, yet standing, wh hindred their irruptions into Norfolk, or at least wh made some bounds of peace and hostilitie.

Nor is it strange that you observe this loose soyle to have overgrowne this worne & washed causey, for 3 foote or more, since some philosophers conceive, the generall surface of the earth doth rise and somewhat swell. Since the firre trees found upon higher grounds, in the North, lie the depth of some feete under ground. Since the same must be admitted from the constitution of this place, by frequent allussion, and accretion of newe mould, and the temper of the Moore itself, to heave and rise upward; And if the account of the Ægyptian priest were well taken by Herodotus, a notable instance there was therof in Ægypt, while the flowe of Nilus attaining unto 8 cubits, upon the famous columne or Nilescope the standard measure therof, was sufficient in the time of King Myris: but in the dayes of Herodotus about nine hundred yeares after it attained unto fifteen.

from
Dec XI   Your very respectful friend
Norwich   And well wisher
1658   *Tho. Browne*

Transcript of Addendum (Fig. 5)

A remarkable instance of drayning, banking, and recovering lowe or drowned lands, even in our dayes, there was in the marshland of *Holsatia*, about *Dithmarsh* and the tracts of Wilstar and Crompton, in which consisting of lowe grounds and subject to inundations, Johannes Adolphus, duke of Holstein, beginning in the yeare 1610, by notable workes within five yeares he secured many thousand Acres, and improved the lands above 3 hundred thousand dollars which being effected he parcelled them out by gift or sale unto his subjects; securing (?) out of every proportion rent unto himself. tantum territorii salditis et amicis cossit, ea lege ut vel aggeribus cinquitur, volat aquis intestinis libentur, et hinc quotannis colsitudinis sua arario certus canon pro quolibet demeto † numeretur, as stands delivered by a ‡ learned man of those parts.

† Every demetum containes 36 virge* in length and 6 in breadth and every virge 16 foote.

‡ Schoneuldeus in Fithiologia, page 47.

* A virge (verge) is a quantity of land containing 15 to 30 acres.

THE SIAMESE TWINS OF ESPAÑOLA

[THE FIRST KNOWN POST-MORTEM EXAMINATION IN THE NEW WORLD]

By A. PEÑA CHAVARRÍA AND P. G. SHIPLEY, M.D.

BALTIMORE, MD.

DURING a somewhat protracted search through the apparently interminable pages of the "Historia General y Natural de las Indias,"[1] in an attempt to throw some light on a disputed question of tropical epidemiology, we came upon a description of what we believe to have been the first pathological examination conducted by white men in the western hemisphere. This examination antedates by over half a century that performed on the dead scorbutic soldier by Cartier's surgeons at Stadacona. Since there are many points of interest about this autopsy aside from its early date and since the works of Oviedo, while not absolutely rare, are not commonly known we shall venture to call attention to the short chapter in which it is described.

It may not be amiss to introduce the discussion of the works of Oviedo with a very brief account of his most interesting and eventful life, the story of the labors and triumphs which is not as well known as its accomplishments entitle it to be. El Capitan Don Gonçalo Fernández de Oviedo y Valdés was born in Madrid in August of the year of Grace 1478, of somewhat uncertain parentage. It is possible that he was the son of Fernándo de Oviedo, *regidor* of Madrid, but it is more probable that his father was Juan de Oviedo, secretary to Don Enrique IV in 1466.

In his early boyhood Gonçalo entered the household of Don Alphonso of Aragón, Duke of Villahermosa, as a page, but before the end of his thirteenth year he became *mozo de cámara* to Don Juan, son of their Catholic Majesties, Ferdinand and Isabella, who was of the same age. So began his contact with the most brilliant of the courts of Europe, with its splendid festivities, its gorgeous tournaments and jousts, and its heroic and chivalric traditions. In these surroundings he made the acquaintance of Cristóbal Colón, the poor, obscure sailor who, guided by Providence, came to Granada to offer to Queen Isabella the most magnificent opportunity of all the ages, the poor Genoese "whose memory," Oviedo himself said, "shall have no end, for when all that is written and shall be written shall have perished from the earth, heaven itself shall perpetuate this famous story." In this service he continued with honor and remained in the confidence of his master until the death of the latter at Salamanca on October 4, 1497.

After the death of Don Juan the court dispersed in designated order and the chivalry of which it was composed wandered away to seek glory, adventure and, perchance, death in the wars of the period. Of all, the last to go was Oviedo: "Driven by my discontent from Spain to wander through the world, having undergone many privations and labours, sometimes as amanuensis, sometimes as a mercenary soldier, at others wandering unoccupied from kingdom to kingdom, and from one place to another." In his travels he practiced the professions of letters and of arms both of which he had acquired at the court of Don Juan. He made the acquaintance of Titian, Leonardo and Michaelangelo, of Sanazzaro, the poet, and of Pontano, and carried on his studies. His written works are replete with the results of the latter.

At the age of twenty-four he married Margarita de Vergara of Toledo, who, however, died a short ten months after their marriage. Oviedo then returned to military life and took part in the defeat of the French before Rosellon in 1503.

After eleven years more of courtier's life he embarked with Don Pedrarias Davila (Pedro Arias de Avila) for the Americas, to be stimulated there to carry out the idea he had preconceived in 1492 of recording the story of the New World. On the 12th of June in the year 1514 the first historian of the Western hemisphere saw the land, the beginnings of which he was to chronicle from the bay of Santa Martha in Castilla del Oro (Atlantic America from Cabo de la Vela to Cabo Gracias á Dios). In October of the following year he returned to Spain, having already begun work on his history.

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[1] Oviedo, Madrid. 1851–55.

He carried with him a most amusing cargo of presents for his sovereign, six cannibal caribs, the first sugar from the western world to reach Europe, cassia fistula, six Indian girls and thirty parrots. Conversation can never have flagged during that voyage. He soon returned to America but 1519 found him again in the Iberian Peninsula. On this journey he was very ill with an attack of acute continued fever (perhaps malaria), so ill indeed was he that he was believed to be dying on shipboard. Once, during this illness he asked a sailor to destroy a blanket which was over his body. This the man was proceeding to do when Oviedo's servant, who had not heard the request, and believed his master unconscious, called out: "Don't take that! If you do we shall have nothing to wrap around him when we throw him overboard." Gonçalo overheard this remark and rose in anger from his couch saying: "I shall not die at sea nor shall I, I trust, be buried anywhere save in consecrated ground." His recovery from this attack was dated from his anger at the servant's misplaced solicitude. In 1523 he visited Santiago de Cuba, fortunately unable to foresee the drama destined to be played there 375 years later, which ended the rule of Spain on the western shores of the Atlantic.

The years between 1514 and 1528 were occupied in the duties of his numerous offices, by literary activity and by quarrels between Oviedo and Pedrarias Davila. The latter, if one is to believe the records left behind about him, was one of those human fiends who made the word *conquistador* a reproach and a blasphemy; whose cruelty, tyranny, savagery and greed made the government of the Indies a hell on earth and a dance of devils, and who obscured the courage, unselfish devotion and chivalry of such men as Oviedo and Las Casas beneath the midden of their crimes. Oviedo made representations against him at the court of Spain and in 1528 had the satisfaction of seeing Davila recalled and replaced by Pedro de los Rios with whom Gonçalo returned to America. During all this period Oviedo had held office as *regidor* of Panama and Darien and had also been retained in the important and responsible post of *Veedor de las Fundaciones del Oro* (intendant and auditor of the colonial finances). He had married for the second time and had a family of children living in Santo Domingo on the Island of Española to whom he returned in 1529. He also had published in 1526 his short work, "Sumaria de la Historia Natural de las Indias."

The political atmosphere had not, however, cleared for Oviedo with Davila's departure for Spain, nor had matters in the colonies greatly improved and quarrels arose with de los Rios because of usurpation by the latter of some of the prerogatives of Oviedo appertaining to his authority on the mainland. These led to another Spanish voyage and a suit before the Archbishop of Santiago, who decided the matter in favor of Gonçalo and subjected de los Rios to a fine, deprived him of office and forbade his return to the Indies. Having been created general historian of the colonies by the king, Oviedo returned to Española which he resolved never again to leave and settled down in the post of *alcalde* of the fortress of Santo Domingo vacated by the death of Francisco de Tapia. Three years later appeared the first result of his clerical appointment, the first book of his major work, "La Historia General y Natural de las Indias."

The death by drowning of Oviedo's son, Francisco, who had previously succeeded to his father's intendancy while serving in the army of Almagro in Peru, embittered the year of 1536 for him. He must, however, in the years to come, have found consolation for this untimely end in the thought that the death of his son's body may have meant the salvation of his soul and that his sacrifice beneath the waters of that far away Peruvian river may have spared the lad the disgrace of continuing in the service of the Almagros to his moral destruction, and of falling with Pietro di Candia on that bloody field in the hills of Chupas, stricken against the licenciate Vaca de Castro and Carvajal, a rebel against that king his father had served so well.

Oviedo remained occupied in Santo Domingo until the autumn of 1556 when he returned to Spain for the twelfth and last time, to find that the conqueror of Italy and the victor over the Turks, tired of royal splendor and borne down by the imperial purple had retired to the monastery at Yuste, careless of everything on earth save the expiation of his sins.

Settled in Valladolid, Oviedo resumed work on his history starting with the twentieth book, the first of the second part. He was never to enjoy the fame his work was to bring him, however, in this life, since only this book was published, and the rest of the second and all the third parts remained in manuscript unknown until our day. Early in the autumn of 1557 Gonçalo Fernández de Oviedo y Valdés, general historian of the Indies, captain of the fortress and city of Santo Domingo on the Island of Española, in his youth *mozo de cámara* to prince John, friend of Columbus and the Pinzons, man of letters and the sword, died, pen in hand, in his seventy-ninth year.

In the course of a long and busy life twelve works were published by Oviedo, the best known of which was the great "Historia" from which we quote below. He was omniscient in the knowledge of his day and this book is abundant evidence of that fact. He wrote ably of the customs and habits of the savage people he found about him and, though neither a botanist nor an entomologist, his descriptions of the fauna and flora of the New World were above reproach. He was no physician but he has left good records of some of the diseases of the tropics. He recorded the case history quoted below, clearly and thoroughly in excellent language and style, missing no important detail.

The marvel which he was stimulated to report by Antonio di Fierenze's description of the two-headed boy of the valley of the Arno was the following:

On the night of Thursday the 10th of July, 1533, in the town of Santo Domingo on the Island of Española (Haiti and Santo Domingo) a double monster was born to Melchiora, wife of Juan Lopez Ballestero, formerly of Sevilla. These Siamese twins were female. Oviedo saw them the next day in the company of the important officials, priests, scientists, and residents of the city and the neighboring country. The two children were joined each to the other from the umbilical region upward to a point on their thoraces just below the breasts. They were not of equal size and they were not joined directly face to face. The right side of the larger twin was joined to the left of the smaller in such a manner that the junction of planes passing through the bodies of the children would have formed an angle. The area of junction was larger on the right side of the large twin than on the left of the smaller and extended to the mid-sternal line "where the ribs are joined over the mouth of the stomach," the remainder of the thoraces being free.

A single umbilicus was common to the two but each child had two breasts, arms and shoulders. The necks and heads were separate and each head was well formed and of good features. Indeed Oviedo seems to have been impressed to a considerable degree by their good appearance. "Cada una dellas fuera mujer hormosa viviendo si no estuvieran assi juntas." (Each of them would have been a beautiful woman, had they lived and not been thus joined.)

Their bodies were well developed and below the umbilicus they were apart and quite normal without any defect of arms, hands, face, or legs. The skin on both children was clear of any defect.

Oviedo observed that when they were stripped and put on exhibition, both began to cry, but when they were dressed again one became quiet, although the other continued to scream for a short time. After the autopsy at the time of their death the father was asked if during life they had shown any difference in their feeding habits or other reactions and behavior. He replied that, as we have said above, one would often cry while the other was quiet and that, furthermore, one often slept while the other waked. And that feces and urine were sometimes voided at the same time and sometimes at different times. For these reasons, says the historian, "muy claramente se conosçia ser dos personas é aver alli dos ánimas é diversos sentidos aunque no las abrieran." (It was clearly seen that they were two individuals and had two souls and different minds, even though they had not been opened.)

They lived in this form eight full days and received the sacrament of baptism, one being called Johanna, and the other Melchiora. They died one-half hour before sunset on July 18, 1533. Just as the larger twin was born a short time before the smaller, so she anticipated her sister a short time in death.

The administration of the sacrament of baptism caused a considerable tumult in the mind of the good *Fray* into whose hands the twins fell to receive it, for he was much puzzled by the question as to whether this monstrous body housed two souls or one. However, he very cleverly got over the question by the use of the ritual for the baptism of those concerning whose previous baptism there is doubt, saying: "Si no eres baptizada, yo te baptizo" when, one having been christened, he applied the water to the other. Apparently, however, his mind was not entirely at ease after this sedative expedient, for the dissection of the twins after their death was done largely for the purpose of resolving the doubts concerning the spiritual individuality of the two parts of the whole, and no attention was given to determining the cause of their death. We are inclined to believe, moreover, that this uncertainty was instrumental in securing the ready consent of the parents to a post-mortem section, an uncommon procedure in that time and place, when medical investigation of the dead was even less approved by the laity than it is today and the bull "De sepultura" was no historical curiosity but a vital influence.

However that may be, Don Gonçalo attended the autopsy and we will let him report it in his own words.

> Siguióse despues á los diez é ocho dias del mes é año ya dichos, que a causa que la noche antes estas niñas ó mónstruo estaban muertas, sus padres vinieron en consentimiento de las abrir; y puestas en una mesa, el bachiller Johan Camacho, óptimo çirujano, en presençia de los doctores de mediçina, Hernando de Sepúlveda é Rodrigo Navarro, las abrió con una navaja por á par del ombligo, é les sacó todas las interiores; é tenian todas aquellas cosas que en dos cuerpos humanos suele aver, conveniente á saber: dos asaduras, é sus tripas distintas é apartadas, é cada dos riñones é dos pulmones, é sendos coraçones, é hígados, é en cada uno una hiel, exçepto que el hígado de la una é de la otra estaban juntos y pegados el uno al otro; pero una señal ó línea entre ambos hígados, en que claramente se paresçia lo que pertenesçia á cada una parte. É assi abiertas estas criaturas, paresçió que el ombligo ó vid que en lo exterior era uno al paresçer, que en lo interior é parte de dentro se dividía en dos caños ó vides, é cada una dellas yba á su cuerpo é criatura, á quien pertanesçia, aunque por defuera, como he dicho, paresçiesse uno solo.
>
> É desde la dicha vid para abaxo estaban estas niñas distintas, é apartadas una de otro por si, en vientres y caderas é piernas é todo lo demas que puede tener una mujer tan perfectamente, como sí cada una estoviera por si suelta y separada.

(Having died the night before, on the eighteenth day of the same month and year their parents gave consent to their being opened; when they had been placed on a table, the bachelor Johan Camacho, master surgeon, opened them in the umbilical region with a lancet in the presence of Hernando de Sepúlveda and Rodrigo Navarro, doctors of medicine,[2] and drew out all the viscera; and they had everything that is to be found in two human bodies as follows: There were two sets of guts, the intestinal tracts were distinct and separate, in each were two kidneys and two lungs; each had a heart, and there was a liver and biliary apparatus for each; but the livers were joined one to the other, with, however, a furrow or line between the two which clearly showed the part that belonged to each. And having been opened in this way it was seen that the umbilicus or navel which from without appeared to be one, was divided within into two canals, or cords, and that each one of them went within to its proper body or creature to which it belonged, although it appeared from without as I have said to be single.)

The autopsy finished, Johanna and her sister were officially spiritually disunited. They had been almost literally a nine-day wonder in the town of their birth. A great marvel they were, more wonderful than even the two-headed boy of the Arno and like all marvels were not vouchsafed without cause to erring humanity. The pious sixteenth century Spaniard saw this clearly and interpreted the miracle saying:

> Yo las ví, como he dicho vivas, é las ví abrir despues de muertas; é paresçeme que es muy major notable ó admiración é caso menos veces visto, ni oydo que el que se tocó de suso que escribé el Antonio de Florençia, ỳ lo uno y lo otro para dar gracias á Nuestro Señor é notificarsse a los presentes y porvenir.

(I saw them, as I have said, living, and I saw them open after death, and it seems to me that this is more notable and remarkable, and unheard of and seen much less often than that (anomaly) on which we touched above, which Antonio de Florence described, but both the one and the other were sent to glorify God and to show his presence to those present and for future time.)

It is quite apparent from the foregoing description that the monster Johanna and Melchiora only just escaped becoming a pair of ordinary single ovum twins. The anomaly which was responsible for their condition must have occurred very early in intrauterine life, only just after the development of the embryonic plate or shield. Instead of a single primitive streak, two were formed and two medullary grooves with their accompanying folds. Instead of these structures lying parallel, however, as is the case when ordinary single ovum twins develop, the two primitive streaks diverged each from the other to form an angle and they remained attached at the ends farthest from the medullary groove. It is in this region that, later on in embryonic life, the body stalk is formed, and in this region the intestinal portal enters the body in the neighborhood of which the liver develops. Johanna and Melchiora had in common the body stalk (umbilicus) and the liver and nothing more.

Therefore these twins were two, although formed from a single ovum, before brain or heart or circulation had appeared.

The good cleric who baptized Johanna and Melchiora had reason to be puzzled about the entity of the souls of the twins and, in calling in the help of an anatomical study in his predicament, he followed an example set centuries before by the corporate body of the church. We shall not even attempt to propound the question as to whether or not the decision of the council in Santo Domingo was correct or incorrect since we confess to an almost boundless ignorance of that philosophy which sought to localize the psyche in the corporal body of man and are not equipped to defend any thesis as to the duality of the souls of Johanna and her sister. We shall only point out in a very sketchy manner some of the reasons for the *Fray's* difficulties.

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[2] We know nothing of the two physicians mentioned by Oviedo except that they bore the reputation of being skilled botanists. The pathologist-surgeon, the first of a long line of craftsmen in the two Americas, appears to have accompanied Vasco Nuñez de Balboa, probably in his professional capacity, on that expedition across the Tierra Firme which gave to their Catholic Majesties the absolute dominion over the Pacific Ocean.

The church was by no means clear as to the seat in the body of the human soul and almost every organ had at one time or another been indicated and credited as the *domus animæ.* If the majority opinion of the time (that the soul of man was either in the brain or in the ventricles of the heart) was to prevail, then the sisters were evidently two, unless one could grant the impossible possibility that the soul could continue to exist in the state of division. The same would have been true if the seat of the soul was located in any other organ saving only three: the liver, the umbilicus and the blood.

The holy church at that time was not giving much consideration to the liver as the seat of the soul and the doctrine of the omphalopsychists was damnably heretical. But there was more than a little to be said as to the blood being the seat of the soul since according to the Vulgate *Anima omnis carnis est in sanguine,* which is a definite, precise, and authoritative statement. This pronouncement being accepted literally, Johanna and her sister were one, unless it could be assumed that one circulation could provide a common natatorium for the souls of two individuals. It will be seen that except in the presence of a dogmatic statement as to the house of the soul the question was insoluble on an anatomic basis. Let us see how an embryological study can help solve the difficulty.

We have said above that the splitting of the ovum which became Johanna and Melchiora must have occurred very early, before the formation of heart or blood or brain, but after fertilization (conception) had taken place.

According to Tertullian, the soul was conceived with the body, but following St. Augustine the embryo was without a soul until the fifty-eighth day and by canon law the male fetus became animate on the forty-fifth day, the female on the eightieth, of intrauterine life. We must agree with the church that the conception of Tertullian was wrong since, as he placed the soul in the blood and heart, if it were to enter the embryo at conception it must wander homeless in that mass of protoplasm until the development of the heart and circulation.

Then according to canon law these Siamese twins were already divided and possessed two hearts and two brains when the *anima* entered the fetal body and, unless we believe that the blood contains the soul and are prepared to sustain as a thesis that there can be but one soul in a circulatory system, it seems better to regard the sisters as two on embryological grounds.

We have indicated only a few of the possible philosophical speculations and arguments to which the birth of Johanna and Melchiora might have given rise, and doubtless did, in the mind of the priest. We confess that we feel as did Oviedo and his friends, that for practical purposes the decision as to individuality was best made on physiological rather than anatomical grounds. The church allows that soul and body separate at death and since, beside carrying on separately the visible functions of life, Johanna and Melchiora died separately, the conclusion that they were animated by two individual souls seems justified and the anatomical evidence must be regarded as confirmatory or inconclusive.

This is the history of perhaps the only post-mortem examination ever conducted to study the soul of the deceased. The autopsy findings were held to confirm the deduction from the father's answers to the questions of those in authority. Johanna and Melchiora were two and *passaron desta vida á la gloria celestial, donde plega a Nuestro Senor que las veamos* (passed from this life to celestial glory where, God willing, we shall see them).

GABRIEL NAUDÉ, M.D.

PREEMINENT SAVANT, BIBLIOPHILE, PHILANTHROPIST *

By J. W. COURTNEY, M.D.

BOSTON, MASS.

SHORTLY before 1640, on the corner of the rues Richelieu and Neuve-des-Petits-Champs, that is to say on a parcel of the land now occupied by the *Bibliothèque National* of Paris, Charles Duret of Chivry, son of the famous Louis Duret, physician of Charles IX and Henri III, and president of the *Chambre des comptes*, built a vast mansion. This was later acquired by one Jacques Tubeuf, of the same Court, who added to it his own *hôtel* situated on the corner of the rues Vivienne and Neuve-des-Petits-Champs.

In 1640 this combination of spacious structures fell into the ambitious hands of Cardinal Mazarin who, determined to surpass in luxury of surroundings his fastidious predecessor, Richelieu, lost no time in summoning from Rome the famous interior decorators, Romanelli and Grimaldi, and in giving *carte blanche* to the ingenious François Mansard to transform architecturally the new possession into a habitation entirely worthy of an outlander who, though nominally only prime minister of France, enjoyed to the full the powers and privileges of the late Louis XIII.

In his house, adjoining the Palais-Cardinal, Richelieu had assembled an unusually splendid collection of books. Not to be outdone in magnificence at any point by him, Mazarin, resolved to achieve in his combined *hôtels*, Chivry and Tubeuf, a library richer and more sumptuous than any then existing. To assure the entire success of this achievement he secured, without loss of time, the services of the most able coadjutor in all France, not to say all Europe, a man who in his knowledge and love of books and in his skill at collecting them knew no superiors and probably no peers.

Gabriel Naudé, M.D., Mazarin's choice, was born in the parish Sainte-Méry early in the month of February, 1600. His parents, worthy people, so say his biographers, were, doubtless, small shopkeepers in their obscure and crowded *quartier*. His great love of reading was early manifest. His preliminary studies were pursued at the collège Harcourt under professors Prey and Padet. His course in philosophy over he, like Patin, was urged to go in for theology. But his critical spirit, already nourished on Charron and fascinated by the naïve but daring literary manner of Montaigne, scorned, as did Patin's, the cut and dried syllogisms of the Sorbonne, and fastened upon medicine as a more positive science, a science, furthermore, in which he was quite certain to encounter no obstacles to the fullest development of his taste for literary erudition and bibliographic research.

With respect to the chronologic order of events in the life of Dr. Gabriel Naudé there is a certain vagueness on the part of those who have essayed to picture him to us. This is true even of that supreme master of literary portraiture, Sainte-Beuve. Be this as it may, so far as his apprenticeship in medicine is concerned, the most interesting facts are these: He was a pupil of the then famous Moreau, and fellow-student and intimate of the atrabilious bibliomaniac. Gui Patin.

To understand Naudé, as he deserves to be understood, it is important to start with a clear conception of certain of the conditions which environed him. Orthodox medicine was pure Galenism, but adherence to orthodoxy was far from universal. Paris teemed with charlatans of every description. The consuming ambition of "The Faculty" was to confute and confound this sorry crew on every possible occasion. This it naïvely sought to accomplish through the medium of the forum rather than by exact clinical and pathologic observation and by the superior scope of its therapeutic resourcefulness. Preeminence in the profession and preeminence in dialectics were one and the same thing. To attain to this lofty height, one could not afford to fritter away in attendance upon sick people the precious time that might more profitably be spent over one's books. At any moment an overlooked aphorism skilfully wielded by some rank outsider might inflict irreparable damage upon one's prestige; a coveted deanship might be lost by the narrow margin of a single Hippocratic commentary.

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* Read before the Boston Medical History Club, December 17, 1923.

For controversial efficiency a thorough knowledge of Latin was a *sine qua non.* It was quite impossible properly to clinch an argument in any other tongue. For that matter the tomes which came from the pens of Naudé's erudite contemporaries were mainly composed of citations in Latin, borrowed from every conceivable source in antiquity and strung together, with little or no regard for pattern, upon a tenuous thread of French.

Had Naudé been able to confine his commerce with books within vocational limits, and to concentrate upon the purely medical aspect of literature he would undoubtedly have been an outstanding figure in the Faculty of his day, but his consuming passion was the printed word, regardless of its settings. He lived only for books. Somewhere he tells us that he seldom left his library except to go to the manger (*mangeoire*). He was all but the counterpart of the Florentine, Magliabecchi, who ate and slept upon his books, amidst fleas and beloved spider webs. His feelings toward his cherished volumes may well be summed up in these words of Richard de Bury: "They are our masters; they teach us without rod or ferule, without anger and without retribution; when you approach them, they are not napping, they do not hide when you go in search of them; they never grumble if you make a mistake; they never smile superciliously at your ignorance."

Naudé was scarcely twenty when he made his début in authorship with a lucubration on libels. Of this undoubtedly learned octavo volume, entitled "Marfore," there is probably no copy extant; even the one which was in the *Bibliothèque royale* appears to have vanished. Be this as it may, "Marfore" attracted the attention of an eminent bibliophile of the time, the President de Mesmes, who lost no time in securing the services of its writer as private librarian. It was not a rich berth for the budding young author, but it broadened his contact with beloved books and provided him with the wherewithal to add tempting volumes to his own shelves.

In 1623 he gave to the world his now extremely rare "Instruction to France on the Truth of the History of the Brothers of the Rose-Cross." This octavo, written in fifteen days, larded as usual with citations from the Latin, is a most amusing diatribe against "those imps of darkness," the brothers of the Rose-Cross, who were nothing but "vile-smelling slime riling up the crystal-clear springs of Nature."

As time went on, it became more and more evident to Naudé that if he meant ever to get a degree in medicine, he must abandon his position as librarian, and be about it. Consequently, in 1626 he went to Padua in quest of the doctoral bonnet. He had not been long in that city when he was recalled to Paris by the death of his father. Back once more in his old haunts, the lure of books again possessed him. For years he had been filled with the most intense longing to witness the establishment in his native city of a library, *public* in the fullest sense of the term. And it is to this longing that we are indebted for one of the most learned, quaint and charming books about books ever written, Naudé's "Advis pour dresser une bibliothèque" which, under the title: Instructions concerning erecting of a library, was later given to the English-reading world by the able and industrious diarist, John Evelyn, Esquire.

I have not had access to the original but feel certain, after reading with rapt attention the fascinating rendering of Evelyn, who, in a way of speaking, translates with a rather pronounced French accent, that the latter has allowed to escape not a jot or tittle of the subtlety and charm of the "Advis." The little volume is, from cover to cover, a marvelous example of special pleading. No Lothario ever exercised more craft, more wile, to bend to his design of conquest an inamorata than did Naudé in attempting to persuade his former patron, the President de Mesmes, to whom the book is dedicated, that Opportunity in its most expansive mood was knocking on the doors of the Mesmes library and offering its owner imperishable fame, if he would but throw those doors wide open to whomsoever thirsted for knowledge. In point of fact, the lure held out by Naudé was no empty thing, as time has abundantly demonstrated. But, like many another, the President de Mesmes gave no heed to Opportunity's knocking. He must indeed have been insensible, not to say niggardly, to have been able to withstand the Naudéan siren-call.

As Naudé unfolds his project for assembling the necessary components of an enviable memorial to the great man, one's wonder grows that the President could have been so short-sighted and parsimonious. In his exploitation of expedients the author of the "Advis" is at times as *naïf* as a country maiden, at others as *rusé* as a prime minister. Having in mind that the mere mention of the project might at once throw the President's purse-strings into a state of tonic spasm he, obviously with an eye to prophylaxis, administers the following sedative:

> I pretend not hereby to engage you in a superfluous and extraordinary expence, as being not at all of their opinion, who think Gold & Silver the principal nerves of a Library, and who perswade themselves (esteeming Books only by the price they cost) that there is nothing good to be had but what is dearly purchased. Yet, neither is it my design to perswade you, that so great a provision can be made with a shut purse, and without cost; very well knowing that the saying of Plautus is as true on this occasion, as in many others: *Necesse est facere sumptum qui quaerit lucrum;*[1] but to let you see by this present Discourse, that there are an infinity of other expedients, which a man may make use of with a great deal more facility and lesse expence, to attain at last, the scope which I propose to you.

Continuing in this strain, Naudé makes it very clear that nothing is farther from his intentions than to lure the President into emulating "that King of *France* who engaged his Gold & Silver Plate to have a Copy of *Lacertius*, a Book belonging to the Library of the Physitians of this City (Paris), as it is testified at large in the antient *Patent* and Registers of their Faculty." On the contrary he warns him that those who seek books for educational purposes solely should give no more heed to volumes "which have been washed, gilded, ruled and enriched with all manner of nicety, lux and superfluity," than they would to the meretricious trappings of a harlot. No, the way to go about getting together a dignified and serviceable library is to secure wholesale, before their dispersal, large private collections; to beguile friends and, particularly, rich merchants whose affairs call them into foreign parts, into picking up for you desired volumes; furthermore, to acquaint yourself with the heirs of "gallant" persons who, through motives of modesty or precaution, have left behind them their message to the world in the form of manuscripts. Indeed, it might not be a bad idea to emulate the illustrious bookman, Richard de Bury, Bishop of Durham, "great Chancellour and L. Treasurer of England," by making known to everybody the affection we have to books and the extraordinary desire which we have to erect a Library:

> For this being once divulged and communicated, it is certain, that if he who designs

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[1] Nothing ventured, nothing gained.

it be in sufficient credit and authority to do his friends pleasure; There will not be a man of them but will take it for an honor to present him with the most curious Books that come into his hands; and that will not voluntarily admit him into his study, or in those of his friends; briefly, who will not strive to aid and contribute to his attention all that he can possibly.

In addition, one should acquire the privilege of making copies of the tracts which the most learned Regents of the neighboring Universities are to read, "as well in their publique Classes, as in particular," thus securing "a world of pieces, as good & estimable as are many *Manuscripts* which are dearly bought for their age and antiquity."

To these various expedients he "willingly" joins a further one, to wit: "The craft which Magistrates and persons of authority may practise, and exercise by means of their dignities," but he refrains from "more nakedly explicating it, than by the simple narration of the Strategem which the Venetians made use of, to obtain the best Manuscripts of Pinellus immediately after his decease; for upon the advice which they had, that they were about to transport his Library from Padua to Naples, they suddenly dispatched one of their Magistrates, who seised upon a hundred Bales of Books, amongst which there were fourteen of them that contained Manuscripts, and two of them above four hundred Commentaries on all the affairs of Italy; alledging for their reasons, that though they had permitted the defunct Seigneur Pinelli, in regard to his condition, his design, his laudable and irreproachless life, and principally, the friendship which he ever testified towards the Republique, to have Copies of their Archives, and Registers of their affairs; yet it was neither fit nor expedient for them, that such pieces should come to be divulged, discovered and communicated after his death." Naudé then goes on to remind the President that books are not to be sought in high places alone. Even in the haunts of the humblest, printed treasures may be unearthed. So he advocates frequent rummaging excursions to the shops of frippery booksellers, and casual descents into the burrows of dealers in old papers and parchments. There, very often, by the outlay of a few *sols*, priceless acquisitions are to be achieved. Did not Pogius, the lucky wight, come bang upon a Quintillian on the counter of a cook's shop, "during the time that he was at the *Counsel* of *Constance!*" And did not Papirius Massonus rescue from ignominious disintegration an Agobardus which a moronic bookseller designed to use as wrapping paper!

In Naudé's way of thinking, no books, save avowed romances, no manuscripts, were unworthy of a place upon a library's shelves. His broadmindedness on this score raises him head and shoulders above his century. He particularly urges that nothing "worth the reckoning" and which may be of use to ourselves or others, be neglected, such as:

> *Libels, Placarts, Theses, Fragments, Proofs* & the like, which one ought carefully to unite, and gather according to Titles and subjects of such they treat . . . Otherwise, it ordinarily comes to pass that whilst we despise these little Books, which appear only as mean baubles, and pieces of no consideration, we happen to lose a world of rare collections and such as are sometimes the most curious pieces of the whole Library.

Bibles in every conceivable tongue should be on hand, but a niche must also be found for the Koran. The works of the Fathers might turn their backs upon those of *Hereticks*, but they were not to be permitted to rout them from their places. Unorthodox sciences, medical and others, must be given equal shelf-space with the orthodox. There is no accounting for readers' tastes, and no earnest student, regardless of his predilections, should be turned empty-handed from a library's doors.

Fully to understand the eagerness of the Naudéan longing to achieve a public library in France, it is necessary to know the world situation in respect to that sort of institution in the seventeenth century. The "Advis" ranges amongst the memorable things of antiquity which failed to come down to its author's own times, "those assured testimonies (i.e. public libraries) of the *opulency*, and good affection of the Antients toward those who made profession of Letters, and that with so much more reason, as that there are at present, as far as I can understand, none save those of the Knight Bodley in Oxford; of Cardinal Borromeus at Milan, of the Augustine Fryers at Rome, where one may freely enter, and without difficulty." The rest, a goodly number, were all "fair and admirable; but neither open to every one, nor so easie of access, as the three precedent: for to speak of the Ambrosian of Milan onely, and shew how (by the same means) it surpasses as well in greatness and magnificence, as in obliging the publique, many of those that were even amongst the Romans; is it not a thing altogether extraordinary, that any one may come into it, almost at all hours he will, stay as long as he pleases, see, read, extract what Authors he desires, have all the means & conveniences to do it, be it in publique or particular, & that without any other labour, than visiting it himself at the ordinary dayes, and hours, placing himself in the seats destin'd for this purpose, & asking of the Bibliothecary for those Books which he desires to make use of, or of any three of his servants, who are well stipendiated, & entertain'd as well for the service of the Library, as of all those who come every day thither to study in it."

Up to this point little or nothing has been said of Naudé's medical activities. This aspect of his career is, in reality, negligible. In 1628, according to Sainte-Beuve, he was chosen by the Faculty of Medicine to deliver the set oration, properly called the *paranymph*, as was the custom upon the reception of the licentiates. It was a great academic solemnity. Before presenting the successful candidates with the doctoral bonnet and launching them upon the world, The Faculty, like a good mother, had them lauded and recommended in public. There were nine of them that year, three of whom, Brayer, Guenaut and Rainssant, afterwards rose to prominence.

Naudé acquitted himself splendidly. Apart from the nine little panegyrics, he took for his theme the antiquity of the Medical School of Paris. Such a tremendous success was his harangue in Latin, fine, flowery, more than Ciceronian, that it was unanimously voted by the Faculty to include the orator himself among the candidates for the license, a privilege from which his studies at Padua had excluded him. In 1633 he figured on the registers as physician in ordinary to Louis XIII, but it is more than probable that his treatment of that monarch was of the absent variety. Of medical contributions from his pen I can find no trace. His bent, like that of his crony, Patin, was not in the direction of professional communications.

Just before his departure for Padua, he had made secure his literary reputation by the publication of his "Apology for all the great personages who have been falsely suspected of magic (L'Apologie pour tous les grands personnages qui ont été faussement soupçonnés de magie; 1625). Briefly stated, the book's object was to prove that Zoroaster, Orpheus, Pythagoras, Virgil *et alii* were neither sorcerers nor magicians in the then popular sense of these terms. Like all his previous and subsequent writings, the volume was as full of erudition as an egg is of meat. It was an open attack upon belief in sorcery and witchcraft, a most daring enterprise for a youth of twenty-five, in an age when every stratum of society was steeped in this and kindred delusions. But in the seventeenth century, when an author was compelled to subsidize the putting through the press of the fruits of his genius, affluence, naturally, did not accrue from his printed works. So, what with constantly dipping into his slender purse to satisfy the demands of exacting publishers and to secure new accessions to his library shelves, Naudé was seldom without need of patronage which promised something more substantial than fine words with which to butter his parsnips.

A year or more after his oratorical triumph before the Faculty, Pierre Du Puy, a warm admirer, called him to the attention of the cardinal of Bagni, former nuncio of the vatican to France, who was in need of a librarian and secretary. With the opening of the year 1631, Naudé set off for Italy to fill this not over-remunerative position, and remained in that country for eleven long years. His return to Paris in March, 1642, was at the instance of Richelieu who burned with the praiseworthy desire to see the coat-of-arms of the cardinalate graven in stone over the entrance to the first library opened to *hoi polloi* in France. But death soon put an end to this as to other and less laudable ambitions of the prime minister of Louis XIII, and Naudé again found himself without a protector. Not for long, however. Mazarin had for years seen eye to eye with his predecessor in the public library project and, as already stated, once in power, wasted no precious moments in dalliance over the selection of a librarian.

The three experts commissioned by Mazarin to make ready the sanctuary for his books had nobly executed his designs. The *Bibliothèque Mazarine*, with its graceful columns, its superb wood-carvings, its shelf-lined galleries was, architecturally speaking, a thing of surpassing beauty. But its principal ornament, books, was still lacking when Naudé assumed the rôle of *genius loci*. At his urgent instance Mazarin, in 1643, by an outlay of 22,000 *livres*, secured the entire library (about 6,000 volumes) of a famous bookman of the time, one Descordes, Canon of Limoges, and made it the nucleus of his own. In that same year, from the warehouses of Paris publishers, the shops of "frippery booksellers," the dust-laden recesses of dealers in ancient papers and parchments and the cupboards of second-hand book-venders, which crowned the parapets of the Pont-Neuf, six thousand further tomes, both bound and unbound, were added to the Mazarin foundation. By the end of the year, what with its 12,000 volumes and its 400 manuscripts in-folio, this library was looked upon as one of the most complete in Europe.

Richelieu, in his eagerness ever for new accessions to his shelves, was wont to send his librarians into distant parts, with orders there to pick up "the best books and the most precious manuscripts." His successor followed his example. Upon the command of Mazarin, Naudé made at various times, tours of conquest into Flanders, Italy, Germany and England. In his "Recherches sur les bibliothèques," M. Petit-Radel tells us that, in the last-named country, there are still preserved certain of the catalogues from which the Mazarin librarian made his selections.

It is said that in his bibliographic excursions Naudé's method of purchasing was highly original. He bought everything in sight, without too much troubling himself over titles. In a letter written from Rome and touching upon Naudé's descent on that city in 1645, Janus Erythraeus (Rossi) tells us that, following a Naudéan visit, the booksellers' shops looked as though a hurricane had passed their way. This same Rossi letter pictures the eager collector emerging from subterranean raids, with arms full and pockets bulging, and covered from head to foot with a thick, clinging, mantle of cobwebs.

It has become legendary that the wares which Naudé shipped back to Paris in packages, bales and van-loads were bought, literally, by the yard at about the then current prices of pears or lemons. Be this as it may, certain items on his catalogue today rival in value the famous Kohinoor diamond, whose history is not a whit more romantic than theirs. Only recently it was announced in the public press that the Mazarin Bible, so-called, had changed hands in New York City, at the somewhat startling figure of sixty thousand dollars—a tidy sum even in an age which holds all records for altitude in the way of prices. This *biblia sacra Latina (dicta Mazarinaea)* is an in-folio in two volumes, in the Gothic character, on large paper without numerals, signatures or printer's directions; the full pages are two-column affairs of forty-two lines, the others of forty lines. Because of the last-mentioned peculiarity, this curious and magnificent specimen of Maintz typography is sometimes referred to as the "Forty-two-line Bible." The name "Mazarin" was given to it because it was the first, in the Cardinal's collection of two hundred bibles, to attract the attention of bibliographers. It is thought to have been printed at Maintz, between 1453 and 1455, by Gutenberg with types founded by Schoeffer. It must certainly have appeared before 1456, for at the end of the copy in the possession of the *Bibliothèque impériale* there is a manuscript note to the effect that the copy in question was illuminated and bound in that year by Henri Cremer, vicar of the collegial church of St. Stephen of Maintz. It is, therefore, incontestibly the oldest printed edition of the sacred text.

In view of the Naudéan method of collecting and the carefully calculated generosity of fawning favor-seekers, it is not surprising that the Mazarin catalogue, by the end of the year 1647, had come to contain over 40,000 items. In a burst of admiration quite beyond his power to repress, Naudé characterizes this beloved collection, this great work of his own hands, as "the finest and best equipped library that ever was or ever will be in the world," quickly adding with touching naiveté, "that is, if my affection does not deceive me." It certainly does deceive him when, elsewhere, he refers to his finished project as "the eighth marvel of the universe."

Human character is a thing of curiously contrasting facets. Naudé's biographers tell us that no woman ever aroused in him a tender emotion. In his modest dwelling at Chantilly he managed to tolerate the presence of a female cook because, as he jocosely tells us, he sometimes desisted long enough from his studies to go to the *manger*. However, in spite of this outstanding misogynistic trait, he constantly refers to the Mazarin library as his "daughter."

Snugly sheltered within the walls of Rome, he had written his infamous "Coups d'état" which comprises a vindication of the St. Bartholomew massacre, a document so perfectly inhuman and revolting that the reader recoils from it in horror, wondering what manner of monster-mind spawned a thing so unspeakable. And wonder waxes when one finds that it was the same mind which conceived the subtly delicate idea of contriving a retired entrance, royal in its exclusiveness, through which supersensitive, out-at-elbows, seekers after knowledge, garret-rats from the "left bank" or lodgers under the Pont-Neuf might make their way direct to the Mazarin volumes without encountering the disdainful glances and humiliating innuendos of the Cardinal's ornate flunkies and other equally offensive servitors.

For several years prior to 1648 the entrance in question was put to use by favored scholars. Naudé tells, with pardonable pride, that he often saw upwards of a hundred of them at a time, all immersed in pages of his precious volumes. The great event, the public opening of the library, was on the cards for the early autumn of 1648. Already, an engraver was busily at work fashioning, in letters of gold upon black marble, the Latin inscription which was to figure over the above-mentioned famous door, announcing to the citizenry of Paris, or to such portion of it as was versed in the Roman tongue, that it might freely enter and rub elbows with an illustrious company of books. The Naudéan dream of years bade fair to come true.

In the following letter to his colleague, Falconet, Dr. Gui Patin tells of a celebration which Mazarin's overjoyed librarian had planned in anticipation of the occasion:

> Monsieur Naudé, bibliothecary of Cardinal Mazarin, has asked M. Gassendi and myself,

both very intimate friends of his, to sup and spend the night with him on Sunday next. He promises that the party will be limited to just us three and that a debauch is in prospect. But what a debauch! Naudé does not even know the taste of wine. Gassendi is so delicately constituted that he would not dare drink anything, imagining that it would set his body on fire. So I may well apply to both of them this verse of Ovid's: *Vina fugit, gaudetque meris abstemius undis.*[2] As for me, I am only fit to sprinkle sand on what flows from the quills of these two great men. I drink very little, and yet there will be a debauch—a philosophic one . . .

What would have gone on had the projected "feast of reason and flow of soul" taken place, we can only conjecture. Fate decreed that the feast was not to be. On the very day (August 27, 1648) of the Patin letter the fierce animosity against Mazarin, which had long slumbered in the breasts of populace and parliament alike, burst into a blaze which threatened to be all-consuming. Immediately the streets of Paris were barricaded by the angry Frondists and the air grew thick with libels against the "Italian interloper, faithless pantaloon and titled crook," as Patin delicately characterizes the successor of Richelieu. The time had come, so Parliament thought, to put an end to the national hardships wrought by his intolerable extortions, his simony and other nefarious methods of diverting both public and private funds from their lawful purposes.

The setback to the culmination of his project by this upheaval was, undoubtedly, a tremendous annoyance to Naudé, but, philosopher that he was, he regarded the delay as a purely temporary matter, and busied himself with making a collection of all the scurvy and libelous printed things which were circulated against his patron. These he embodied in the most original, interesting and enduring book he ever wrote: "Jugement de tout ce qui a été imprimé contre le cardinal Mazarin, depuis le sixième janvier jusques à la Déclaration du premier avril mil six cens quarante-neuf." It is also known as the "Mascurat," and purports to be a single day's dialogue, with time out for considerable food and still more drink, between two printers and vendors of libels, the one a high-, the other a low-brow. The second, and preferable, edition of "Mascurat" is a large in-quarto of 718 pages; and this fact, in and of itself, is evidence that the conversation between the hawkers of libels was not a languishing affair. Sainte-Beuve, commenting on this *chef-d'œuvre*, says that it is difficult to indicate any subject which is not touched upon in it, and contends that anyone, in any field of learning, who essays to write a treatise, will find to hand therein a perfect gem of a preface.

With indifferent success, Anne of Austria made an effort to stifle the flames of righteous indignation with a blanket in the form of a threat to Parliament to convoke the *états généraux*. But the fiery anger of the parliamentarians was not thus to be extinguished. On the twenty-ninth of December, 1651, this body, learning that Mazarin who, in February of the same year had discreetly retreated before the flames of their ire, was at Sedan on his way to Paris, decreed that the pictures, furniture, *objets d'art* and library of the Cardinal's palace should be sold to the highest bidder; and offered a reward of one hundred and fifty thousand *livres*, accruing from the sale, to anyone who would produce the "titled crook," dead or alive.

Naudé's absolute consternation at this decree, although easily imagined, baffles description. Thrown into a panic by the mere thought of his adored "daughter" being dismembered by ruthless alien hands he gives eloquent voice to his paternal pain in the form of an address to *nos Seigneurs du Parlement*, into which he puts every accent of persuasiveness within his command. All in vain! In spite of Naudé, in spite of royal edict, the sale went on. And, to make matters as bad as they could possibly be, the library was dispersed very much as it had been acquired—that is to say, by the yard. The medical books were salvaged by Naudé at a price which must have made his already too slender purse look as though a steam-roller had parked on it. Poetic justice is a fearsome thing!

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[2] Wine he shuns; abstemious one that he is, he indulges only in pure water.

In July, 1652, the award of 150,000 *livres* was still open to anyone who would produce Mazarin "alive or dead." Six months later those who proffered this alluring sum were falling over one another in the effort to curry favor with the "faithless pantaloon"; and the volumes which had taken flight from his *public* library shelves at the sound of the auctioneer's hammer were behaving like homing-pigeons. In the work of restoration, greed of favor worked wonders where a father's tenderest love for his "daughter" had failed miserably.

Unfortunately, father Naudé was not there to view and attest the miracle. Quite unable to support the horror of witnessing the dismemberment of his child, he had yielded to the earnest solicitations of Queen Christina of Sweden, a bluestocking of sorts, and had gone to Stockholm to take charge of the Royal Library. There he encountered the élite of European science, assembled at the call of the Queen. But the climate, added to the effects of the stinging blow he had received in the ruthless dispersal of his cherished collection, was more than he could endure. Gladly he set out for Paris at the call of his old patron. But Mazarin never again saw him. He died at Abbeville, on French soil, the twenty-ninth day of July, 1653, of what, in the medical jargon of the times, his intimate, Dr. Gui Patin, calls "a continued fever."

What is the reward of a life of such unremitting scholarly industry? Well, even in our times, some few inquisitive individuals are aware that it was the preeminently erudite book-gatherer, Gabriel Naudé, M.D., who opened the doors of the first public library in France. These same persons are aware, perhaps, that at least one fellow book-gatherer and friend, Dr. Gui Patin, wept bitterly "day and night" over his death; it may even be known that in the permanent home of his "daughter," the College of the Four Nations, on the left bank of the Seine, an obscure gallery or stair-case or something bears his name. To more than this signal honor no mere bookman has any legitimate right to aspire.

[From Donzelli: Teatro Farmaceutico, Roma, 1677]

OUTLINES OF THE HISTORY OF MEDICINE IN LOWER CANADA

UNDER THE ENGLISH RÉGIME

By M. CHARLTON

MONTREAL, CANADA

(IV *Conclusion*)*

IT WAS not until the beginning of the nineteenth century that those wishing to pursue the study of medicine could do so in their own country. As we have seen, the majority of the English physicians were retired army surgeons who had received their medical training in Great Britain. The young men who wished to enter the medical profession were articled or indentured before a notary, as pupils to some of the leading physicians in Quebec and Montreal. Sometimes as many as four or five pupils would be under one teacher, subsequently going abroad to finish their education. The fees paid for being thus articled were from thirty to fifty pounds. A great deal of work was gone over in the four, or as it sometimes happened, five years the student spent with his teacher. They read together for a certain number of hours and for clinical work the student would accompany the teacher on his visits to his patients. Not infrequently he was called upon to assist in minor operations, which gave the student a good insight into minor surgery and thus early in his career taught him self-reliance and trained his powers of observation. The consulting rooms of these pioneer doctors often resembled a dispensary, for in these early days most of the physicians dispensed their own medicines. The students were allowed to make up the doctors' prescriptions, which included smoothly rounded pills made by an apprentice and neatly packed in boxes.

Sir William Osler writes:

> A preceptor would take his pupils over the whole range of medicine and surgery and a knowledge of anatomy was obtained by private dissection, which was carried on extensively. The office practice and the daily round furnished clinical material. The student was much with his preceptor, became his friend and companion and in the course of four or five years, sometimes less, grew really very proficient in the practical working of his profession and felt himself prepared to present himself before the Provincial Board. Some of the very best practitioners we have had in Canada received their medical education in this way.

Robert R. Carter[1] states:

> The term of pupilage required by the Apothecaries Act was five years; but it soon came to be recognized that this might be curtailed with advantage, and an arrangement was often made by which its latter part, and the commencement of the hospital course, were suffered to run concurrently. In the meanwhile not only had the pupil been taught the first principles of professional conduct and the methods of dealing with professional difficulties, but also, in a great number of instances, he had been persuaded and assisted to take up some branch of physical science or of natural history, and was found when he reached the hospital, to have a respectable acquaintance with chemistry or botany, or electricity . . . Professional conduct is no longer taught to medical students. It forms no part of the course at any school of medicine; and systematic instruction with regard to it may be said to have perished with the cessation of domestic pupilage.

Students who could not afford to go abroad went to the United States, which at this time had a number of colleges. The French students, however, unless they understood the English language, could not avail themselves of the advantages offered by the American colleges.

In the library of the McGill Medical Faculty there are several of these early indentures. Dr. E. D. Worthington[2] tells us that he was indentured before a notary public to Dr. James Douglas of Quebec, a very eminent surgeon in that city, who was living on Mountain Hill in a house now used as a hotel.

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*Part I: v, ii, 150; part II: v, iii, 263; part III; VI, ii, 222.

[1] Carter, R. R. Doctors and Their Work.

> It was built when the country was under the dominion of France, and a remarkable house it was, and probably is to this day. It was built on the slope of a steep and tortuous hill, and built apparently to last forever. The foundations had been laid at the foot of the slope on Notre Dame Street, near the site of the historic church of Notre Dames des Victoires, and the building was carried up so as to have two stories on Notre Dame Street, and two and a basement on Mountain Hill. The house thus fronted on two streets, each having its distinct and separate entrance, one shut off completely from the other.

Dr. Worthington was indentured in 1834 for seven years, but was released from his apprenticeship at the end of five years so as to enable him to become assistant surgeon to H. M. Regiment of 56th Foot.

Dr. James Douglas deserves more than passing notice, for he was one of the best surgeons in Canada and did as great a work for Quebec as Robertson, Caldwell, Stephenson and Holmes were doing at this time for Montreal. Canada owes him a debt of gratitude for the manner in which he inaugurated the much-needed improvement in the care of the insane. Dr. Oliver Wendell Holmes said on seeing him: "I did not know whether most to fear or admire him but in his head and figure he was the nearest approach to a Jupiter Olympus of any man I have ever seen." From his portraits one sees that he had a remarkable head with strong, intellectual features, and a fearless soul looks out from piercing eyes.

Dr. Douglas was indentured to Dr. Law of Penrith. The medical pupilage in England was somewhat different from that in Canada and Dr. Douglas has given an account of what he had to do as a pupil of Dr. Law.

> During the second year of my time I had charge of the surgery and made up the prescriptions. I had to visit the pauper class, as well in the country as in the town, and to report on any emergency or on the appearance of any grave symptom. Unless occupied in the surgery I was allowed between eight and nine o'clock in the evening for recreation, and occasionally a day's holiday . . . As perquisites I had the shilling, which was the fee for blood-letting or tooth-drawing. That for blood-letting particularly was very remunerative as it was the custom of the country people generally to be bled every spring, and of many, every spring and autumn. These perquisites, during three and a half years of my apprenticeship, rendered me independent of my father for my clothes and pocket-money.

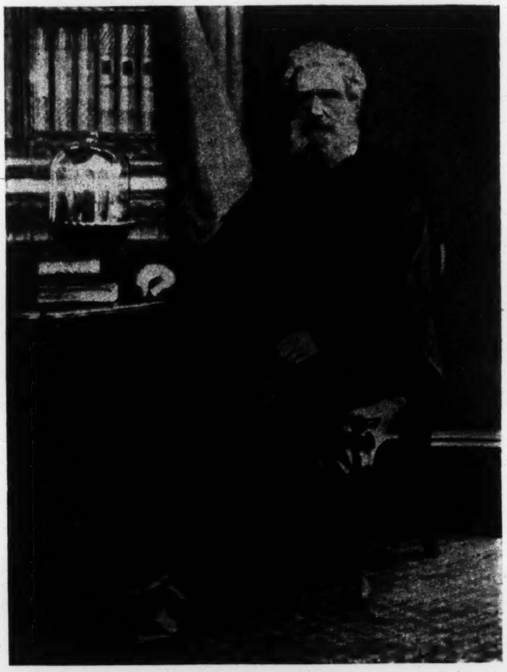

FIG. 1. JAMES DOUGLAS

In the year 1818 Dr. Douglas, who was then eighteen years of age, was entered at Edinburgh University as a student of medicine. It was there he met Dr. Stephenson and Dr. Holmes and a friendship was formed which some years afterwards was to be renewed in Canada.

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[2] Worthington, E. D. Reminiscences of Student Life and Practice.

Dr. Worthington[3] states:

> The first medical lectures ever given in Quebec of which I have any knowledge were given by Joseph Painchaud and James Douglas at the Marine and Emigrant Hospital, beginning on the first of May 1837, 38–39. The subject of Dr. Painchaud's lectures was, as set forth on the hospital tickets, "Sur l'Art et la Science des Accouchements," and "Sur la Theorie et la Pratique de la médecine." Those of Dr. Douglas were "On the Principles and Practice of Surgery." These gentlemen constituted the medical staff of the hospital and the governors or commissioners were Hammond Gowan, Joseph Morrin, and Joseph Parent.
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> This hospital had fallen into a dilapidated state but when Dr. James Douglas took charge of it was placed in a better condition, as he himself mentions: "As a school of practical surgery it was second to none on the Continent." Several circumstances tended to make it so. There was a large fleet engaged in the lumber trade; the ships were comparatively small and loaded with seamen, hence many injuries.
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> The Marine Hospital was situated on the banks of the River St. Charles, nearly opposite to the spot where Jacques Cartier first wintered in 1535. The corner stone was laid on the 28th of May, 1832, by His Excellency, Lord Aylmer, Governor General. It was designed by Mr. Blaiklock, architect and civil engineer. The building was ready in 1834 and could accommodate 362 people.
>
> Dr. James Douglas was the most brilliant operator I ever saw and I have seen some good men in my time, here and in the old country. It was not only that he did his work quickly, but he did it well and his operations were simply splendid. I remember a poor fellow in the Marine and Emigrant Hospital at Quebec, who from frost bite was obliged to have both legs removed just above the knee. It was decided to have the double event come off at the same time—two legs—two operators—with the object of saving the patient as much as possible. From the instant the point of the knife entered, until the leg was on the floor, was one minute and forty-two seconds in Douglas' case. The vessels were tied and the wound dressed inside of three minutes. The other amputation was not quite finished in half an hour when some of us had to leave. The case did well. No anaesthetic was known in those days. It was sheer pluck on the side of both patient and doctor . . .
>
> Dr. Painchaud lived opposite the Artillery Barracks—Palace Gate. He used to do most of his visiting in the city on horseback, and I have a remembrance of only one horse—it was at least sixteen hands high, bay, with a short stub tail, which when the horse was in motion seemed to act as a propeller, it went round like an Archimedes' screw. The horse had evidently been a military charger, he was so thoroughly trained. It had often been a great puzzle to me how the doctor could even get on the outside of such a high horse, but the horse was equal to the occasion. The doctor was not above the average height, and inclined to be stout; he had a kindly, smiling face and was resplendent in waistcoats, worn almost as loose as a blouse, of purple or bright scarlet silk, and most exquisitely got up shirt frills. Wellington boots he wore, with his trousers strapped tightly down; silver spurs and chains; and in his fob he carried a heavy bunch of seals. When entering a house he drew the reins over the back of the saddle and allowed the horse to roam at his own sweet will. When he came out he called or blew a small whistle, and the horse marched up, got his piece of sugar, wheeled his left side to the sidewalk for the doctor to mount, and off he went prancing, to the great admiration of the small boys. Dr. Painchaud had for many years the largest French-Canadian practice in Quebec.

We are much indebted to Dr. Worthington for this delightful picture of Dr. Painchaud, which brings so clearly to view this distinguished and aristocratic physician of old Canada. The house mentioned is still in existence. It was situated at the corner of Côte du Palais and de l'Arsenal, old street of Baraques, No. 2 du Palais and No. 1 de l'Arsenal.

Dr. Painchaud married Mlle. Parant and had seven children. The third child was named Joseph Louis. He studied medicine at the Marine Hospital under his father and Dr. Douglas for eighteen months. In 1845 he went to Paris to continue his medical studies but was influenced by the priests to devote his life to the Missions. He founded the Saint Vincent de Paul Society in Quebec. Always of delicate health, he died about 1855, leaving all his money to the Missions.

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[3] Worthington, E. D. *Op. cit.*

Dr. E. D. Worthington was born December 1, 1820, in Ballinad Kilney, Queens' County, Ireland. After studying with Dr. James Douglas he was appointed assistant surgeon to His Majesty's 56th Foot, then quartered in Canada. In 1845 he was promoted to the position of assistant staff surgeon to His Majesty's 68th Light Infantry, a position which he resigned to go to Scotland to continue his studies in medicine. He graduated from the College of St. Andrews with honors. He was also a licentiate of the Royal College of Surgery and of the Faculty of Physicians and Surgeons of Glasgow. He returned to Canada and passed the examination of the Montreal Medical Board, and began practicing in Sherbrooke, where he soon became the leading surgeon of the Townships.

In 1855 the University of Bishop's College conferred upon him the degree of M.A., and in 1868 the University of McGill added to this the degrees of M.D., C.M.

About capital operations Dr. Worthington says:

> I think I had the honour of performing the first *capital operation* made in Canada under the influence of sulphuric ether, and subsequently of chloroform. On March 14th, 1847, I amputated below the knee in the case of a man named Stone, at Eaton Corner, Quebec, in the presence of Drs. Rogers of Eaton, Andres of Cookshire the Rev. Mr. Sherrill, and I think M. S. Hurd, father of Dr. E. Hurd now of Newburyport, Mass. . . . On March 14th, 1847 I tied the femoral artery, and on April 3rd amputated above the knee, both under ether. These are the first published cases in Canada of capital operations under ether.

Dr. Worthington,[4] speaking on the subject of dissection, before the enactment of laws regulating the supply of "subjects" to the schools, says:

> The only possible way by which the student could acquire a knowledge of anatomy was by providing the subject for himself, sometimes at great personal risk. Now and then came the munificent gift of a criminal condemned by the judge's charge to have his body given to the doctors for dissection . . . Not so many years ago it was not an uncommon thing to read of how graves had been opened in country parishes, or how bodies stolen in those same country parishes had been sold to medical schools in the United States and Canada. The professors of anatomy, unwilling to face danger or suspicion themselves, or through their students, had to buy from whoever had to sell. All this applies more particularly to dissecting rooms attached to schools in large cities, but in private rooms before the passing of the Anatomical Act the students had to get their own subjects the best way they could—or do without them . . . There was a rule in our room (Dr. Douglas') and in that of the French Canadian students of the old city of Quebec, that no bodies should be taken except those of persons who had died in hospital, or who had no friends whose feelings might be wounded; that everything should be done as decently as possible, and the graves left as they were found—not so much to avoid detection as to avoid wounding the feelings of the public . . . Every medical man in the city who had any practice at all had a private pupil; some had three or four. The student was bound by law to pass an examination and show a certain amount of anatomical knowledge before he could legally begin the practice of his profession. By "law" he was bound to dissect, by "law" he might be punished for dissecting.

The difficulty of obtaining subjects for dissection in these early days before the advent of medical schools, is thus clearly demonstrated by Dr. Worthington's reminiscences of his work under Dr. Douglas. Professor Francis J. Shepherd,[5] recalling his student days at McGill University in 1869–73, says:

> Nearly every subject was obtained illegally by the old method of body-snatching. Although there was an Anatomy Act on the statutes of the Province of Quebec, and an Inspector of Anatomy, yet as no penalty was attached to the law it was never carried out. The only institu-

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[4] Worthington, E. D. *Op. cit.*

[5] Shepherd, F. J. Reminiscences of Student Days and Dissecting Room, Montreal, 1919.

tion which fulfilled the law was the Montreal General Hospital which religiously handed over to McGill all unclaimed dead. After the body had been received at the College the Demonstrator of Anatomy went to the Inspector of Anatomy and gave him a fee of ten dollars and was given a permit to dissect the body . . . On my return from Europe in the Autumn of 1875, to assume the duties of Demonstrator, I found that to provide subjects for the dissecting room I had to accept those obtained from "Resurrectionists." The body-snatchers were usually medical students, chiefly French, who by the proceeds of their nefarious occupation paid their fees. The usual price for a subject was from thirty to fifty dollars paid in cash, and for this purpose the Demonstrator was provided with funds . . . At one time the scandal of the body-snatching enterprise became so great that public opinion was aroused . . . French students brought in as many as ten or twelve bodies at a time . . . The Roman Catholic Archbishop at last approached the Anatomical Departments of the English and French Schools and asked them what kind of law they wanted in order to obtain subjects legally. We replied that a law with a penalty attached was necessary . . . The law put an end to "body-snatching" and provided an ample supply of subjects for the dissecting rooms.

This short synopsis abstracted from Professor Shepherd's article on body-snatching written in 1919, shows how slowly any thing was accomplished to rectify things during the years which had elapsed between Dr. Worthington's account and that of Professor Shepherd.

The war of 1812 had only too plainly shown the great want of knowledge in anatomy, on the part of the surgeons who had attended the wounded. Yet Dr. von Iffland was not allowed to procure subjects for dissection without having his life harrassed and even threatened by an irate population, and finally he had to flee from Quebec and take refuge elsewhere. He says:

> Not only were my private apartments ransacked, myself held in durance for some days, but nearly the whole of my anatomical preparations were ordered to be interred under the surveillance of a military (27th Regiment) and civil escort. And what must appear most surprising, is, that the very subject, that gave rise to so scandalous a proceeding, had been, but a few days before, one upon whom an inquest had been held by that very coroner. He had been found lying dead at Point Levis, a stranger, totally unknown to anyone, but through some connivance or other, had found his way to the dissecting room.

Dr. von Iffland's account of what he had to suffer in the interest of science shows the extreme difficulty and danger attending the study of anatomy in those early days.

Anthony von Iffland, M.D., M.R.C.S., was born at Quebec toward the latter end of the eighteenth century. His father was related to Goethe and had settled at Quebec after the conquest, where he married a French lady. He was educated at the Quebec Grammar School, the rector being Dr. Daniel Wilkie. After leaving school he studied for some time under one of the army surgeons, and then went to London where he was articled to Sir William Blizard. From London he went to Edinburgh and then to Paris. He returned to Quebec in 1820, and in 1823, full of enthusiasm for his profession, with Dr. Blanchet and several others he opened a long needed dispensary on Fabrique Street. He began a course of lectures on anatomy, but procuring the necessary material for such lectures provoked such violent opposition that he had to leave the city. From Quebec he went to the Borough of William Henry, as Sorel was then called. It was a thriving place, full of the stir of military troops and in summer the residence of the governor-general and his staff. For ten years Dr. von Iffland practiced here, taking an active part in the social, political and military life of the borough. The outbreak of cholera in 1832 called him back to Quebec. Here with other devoted members of that small but heroic band he labored unceasingly against the plague. A year or two later with two Indian guides he tramped on snowshoes from

Quebec to Gaspe, where he remained for a year. This trip was undertaken to solicit the votes of the inhabitants, as he wished to enter the legislative assembly. Being unsuccessful in this venture, he returned and settled at St. Michel d' Yamaska, a few miles from Sorel. Here he remained until 1847 when he moved to Beauport and in the following year he became resident physician to Dr. Douglas' asylum. He remained here for five years, doing valuable work also as secretary of the government commission on prisons, hospitals and asylums. The report which he made led to many improvements. In 1852 he was appointed medical assistant to the quarantine station at Grosse Isle. A few years later he was appointed medical superintendent to the asylum, where he remained until his retirement in 1867.

Dr. von Iffland was a frequent contributor to medical journals and he was made corresponding member of the Epidemiological Society of London on account of some papers he sent to the London *Lancet.* His writings covered a wide field of subjects, and included a "History of the Town of Sorel" and "Leaves from my Portfolio." He died in 1878.

Chronologically speaking, the care of the insane in Canada did not begin until a later period, but as Dr. Douglas was the one who first started the movement it seems better to introduce it here.

The earliest movement for the care of the insane in America was made in the year 1751 by the people of Philadelphia. Dr. Charles K. Mills[6] writes:

> The very earliest records referring to the Philadelphia Almshouse, indicate that an infirmary or special quarters of some sort were supplied for the insane poor, who became the inmates of the "green Meadows" as it was then called. How the insane poor who found their way into the almshouse were cared for in the first part of the eighteenth century, does not clearly appear. At some time, not determined, it was found that the accommodations were not adapted to the care of the more violent cases, which were sent to the Pennsylvania Hospital, where they were prepared to take proper care of them, the managers paying this hospital for their care. In 1803 cells were fitted up in the cellar of one part of the almshouse at Tenth and Pine Streets, and the insane, numbering at that time ten, were brought back to the city's hospital.

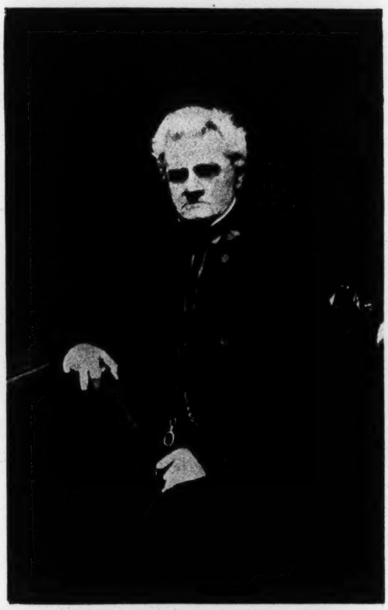

FIG. 2. ANTHONY VON IFFLAND, M.D.

It was at the Philadelphia Hospital that the celebrated Dr. Benjamin Rush used to deliver his lectures on insanity to students. In 1812 he published a book called "Medical Inquiries and Observations upon the Diseases of the Mind,"[7] though it was not until twenty years later that the treatment then in use, namely, bleeding, low diet, purges, calomel and opium, was changed, and bleeding was practically abolished in the United States.

In 1882 the first private asylum was opened in Pepperell, Massachusetts, and by 1844 there were a number of asylums. A few of these were supported by private donations but the greater number by the Government. It was in this year that the

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[6] Mills, C. K. Historical memoranda concerning the Philadelphia Hospital for the Insane, May 14, 1909.

[7] Philadelphia, 1812.

Association of Superintendents of American Institutes for the Insane was founded.

In Canada but little attention was paid to the care of the insane until the year 1845. During the French régime there had been some attempt made for their care by housing them in the Hôtel Dieu at Quebec, and at Montreal. Asylums in a small way were founded at the following cities and towns: New Brunswick in 1835, York in 1841, Quebec in 1845, Prince Edward Island in 1847, Kingston in 1856, Nova Scotia in 1858 and London in 1859. A special committee had been appointed as early as 1824 to report on the provision made for the care of the insane in the Province of Quebec. The following hospitals were taking in a few patients; the Hospital of the Ursulines at Three Rivers, the General Hospital in Quebec and the General Hospital at Montreal. The number of the insane in the province was not great, since 1800 there had been sixty-six male and forty-five female patients confined in the Quebec General Hospital, and in the General Hospital at Montreal eighty-four patients. The report further stated: "That the cells appropriated for the insane of the Province do not admit of properly applying either moral or medical treatment and that the sum provided for their support would have built a well-equipped asylum." This report was printed by the Government but there the matter ended and it was not until 1845 that any attempt at proper treatment was made. Dr. Douglas then made a contract with the Government for the care of the insane.

Many strong editorials were written by Dr. Hall in his journal urging that something be done by the Government for housing the insane in a suitable place. Land had been purchased near Montreal about twenty-five years previously for this purpose, but years had passed without anything being done. The insane were sent to the jail until arrangements could be made for their admission to Beauport. This was always overcrowded and it was not until one of the patients murdered another that the authorities awoke to the necessity of providing suitable accommodation. At this time they had as many as three asylums in Upper Canada. The unfortunate affair at the jail roused the Government and they ordered that the barracks at St. Johns be used as an asylum. This order was carried and Dr. Henry Howard appointed to take charge. This appointment was strongly opposed by Dr. Hall.

Dr. James Douglas[8] recalls the circumstances through which he was induced to care for the insane:

> During the session of the Court of Queen's Bench in the spring of 1845, the grand jurors made a very strong presentment on the treatment of the insane. During the French dominion in Canada and since its conquest by the British the insane had been exclusively in the charge of the nuns. To some members of the government, speaking to me on the subject, I said that I had never seen the interior of the convents, but I thought that their inmates, particularly the insane, would be benefited by the disuse of the confinement and of such severe treatment. Attempts to provide a suitable place for them having failed, I agreed to take charge of them for a period of three years, on the understanding that the Government would then have a suitable place provided for them.
>
> I at once leased Darnoc, the property of Col. Giegy, and commenced to put it in order. I asked Dr. Morrin to join me in the undertaking but he absolutely refused. I then took my friend Dr. Fremont as a partner, engaging to stand between him and any pecuniary loss, should there be any such. After the establishment was in good working order, Dr. Morrin, who had taken much interest in it, proposed to join us, and induced Dr. Fremont to divide his share with him. This arrangement continued until the bonds which united us in the management of the institution were severed by their deaths.

As well as this brief statement concerning the Quebec Lunatic Asylum, Dr. Douglas gave a report to the Government at the end of the three years.

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[8] Douglas, J. Reminiscences.

OPENING OF THE BEAUPORT LUNATIC ASYLUM

> The new building erected for the lunatic asylum at Beauport, near Quebec, having been completed during the past winter, was opened for the reception of patients in the beginning of May, when all were removed to this one from the old establishment. This new building is of very large extent, and capable, we believe, of accommodating over three hundred patients; and although situated only a short distance from the old original establishment, cannot be compared to it for beauty of position. In regard to accommodation and arrangements it is however vastly superior to the one just vacated, and in the building, every regard has been paid to the recommendations of those who are looked upon as authorities in these matters, from their experience acquired in the management of lunatic asylums, and all modern suggestions and improvements in distribution, etc., have been adopted; and we have no doubt this asylum will be, from the character and standing of its managers, a highly useful, well-conducted one.
>
> The dimensions of the building we have given on a previous occasion—it is an enormous block and covers a large space of ground. It is well laid out, airy and seems to be well ventilated. The rooms are lofty and some very large and the sleeping apartments comfortable and well-proportioned; and there are also capital rooms intended for the accommodation of private patients. The building is to be heated by hot air and is lighted throughout by gas made on the premises.
>
> As soon as the patients were arranged in the new building, the proprietors invited about 300 and 400 of the ladies and gentlemen of Quebec to visit the establishment when the whole building was thrown open for their inspection. They kindly fixed on the 14th May, the day of the meeting of the Governors of the College of Physicians and Surgeons, so that the medical gentlemen attending that meeting might also have an opportunity of inspecting this new building, which they did with much pleasure.
>
> After examining every part and seeing some of the patients, who felt inclined so to enjoy themselves, dance to their own music, the guests proceeded to one of the long rooms down stairs, where after partaking of refreshments from a table amply provided and beautifully ornamented with magnificent flowers, they danced to the music of a military band, till a late hour, and retired all much pleased with their evening's entertainment.[9]

In an editorial letter, the editor of the *Medical Chronicle* says:

> There is not, in all Canada, an institution for the Deaf and Dumb, not one for the Blind; and for the Insane, we have two small asylums, capable of accommodating four hundred inmates, but which are now made to hold, by means of some improved packing process, five hundred and fifty lunatics. And we have not the excuse of ignorance to plead. The census report for 1851–2, establishes the melancholy fact, and proclaims it to the world, that there are in the united provinces close on to three thousand insane, nearly fifteen hundred deaf and dumb, and eight hundred and seventy blind. In Canada West the proportion of those suffering from mental aberration, to the entire population, is as one to eight hundred and ninety-one, whilst in Canada East one person out of every five hundred and eight of the community is either idiotic or insane. So that in the entire province, one person in every three hundred and sixty-eight of the whole population is either lunatic, blind, or a deaf mute. Yet we have no provision made for them, no asylum, no hospital, no school. How long will such disgraceful and humiliating state affairs be allowed to remain unimproved? Well may the question which stands at the head of this article be asked of our legislators: What are we to do with our three thousand lunatics, our fifteen hundred deaf mutes, and our eight hundred and seventy blind? Three years ago, by a spasmodic act of humanity, ten thousand pounds were voted by the associated wisdom of Canada, for the erection of institutions for the Deaf and Dumb and the Blind in Upper and Lower Canada.

There were no asylums for the insane in Toronto until 1841. As late as 1836 Mrs. Jameson, who had hoped that an act would be passed for the erection of a provincial asylum, wrote:

> At present these unfortunate persons either wander about uncared for, or are shut up in jails. Instances are known of pauper lunatics

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[9] Editorial. *Brit.-Amer. M. & Phys. J.*

> straying into the forests and perishing there. The fate of those confined in the prisons is not better; the malady is prolonged and aggravated by the horrid species of confinement . . . Dr. Rees has offered a block of land a few miles from Toronto for the site of a hospital or asylum for lunatics, but at present it seems the intention of the Legislature to take the penitentiary at Kingston for an asylum, and erect another penitentiary on a different plan.

In the meanwhile, unknown to Mrs. Jameson a young student had passed with high honors in 1835 at the newly established school of medicine in Montreal, who was to become the most famous alienist in North America, Joseph Workman. Toronto may well be proud of this distinguished man who devoted his life and profound learning to the treatment of the insane, and whose work later was to be taken up and carried on with equal devotion and wisdom by his well-beloved pupil, Dr. C. K. Clarke, also of Toronto.

So far no medical journal had been published in Canada, though in the United States there were several, the earliest being published about 1788. As early as 1735 some physicians in Boston started a series of Medical Memoirs, intending to publish them, but the venture did not materialize. As early as 1773 the American Medical Society of Philadelphia published the reports and papers of their meetings in lay journals and in 1788 the Medical Society of New Haven published the first volume of its transactions. In 1820 the *Philadelphia Journal of Medical and Physical Sciences* was first published, becoming in 1827 the *American Journal of the Medical Sciences.* From the very beginning its list of contributors contained the names of some of the most brilliant medical men of that early period, such as John C. Warren, E. MacDowell, Bigelow, Oliver Wendell Holmes, John K. Mitchell and many others. Dr. Nathaniel Chapman, professor of the institutes and practice of physic and of clinical medicine in the University of Pennsylvania was the editor of the former. It was Nathaniel Chapman who said: "Everything else I have uttered may disappear but my chapter on emetics will last." He is now best remembered as laying the foundation of one of the finest medical journals in the world.

During the first half of the nineteenth century efforts had been made to establish medical periodicals in Canada. The names of those who inaugurated medical literature in Canada are Tessier of Quebec, Badgley, Hall and Macdonnell of Montreal. These were the pioneers of medical journalism in Canada. The first of these journals was published in 1826 at Quebec. The honor for its first venture is due to Dr. Tessier. The journal was called *Le Journal de Médecine de Québec* and was published from January to October, 1827. Owing to the death of the editor, Dr. Xavier Tessier, one volume was all that was published. The journal had two title pages and was published in both French and English. Copies of this journal are now exceedingly rare. Dr. Xavier Tessier studied under Dr. von Iffland of Quebec and graduated in New York. Tessier was a remarkably clever linguist.

One of the most enthusiastic promotors of this journal was Dr. François Blanchet; he it was who prepared the number of meteorological charts which this journal contains, for at this time great importance was attached to the nature of the atmosphere. His name must ever rank as one of the leading medical men in the history of Quebec. Dr. Blanchet gave private courses in chemistry in the Emigrants' Hospital. These lectures were largely attended, many coming great distances to hear them. Dr. Whitelaw at the same time was giving lectures in the old theater. It was about this time that Dr. Douglas also began giving lectures and demonstrations on anatomy in the cellar of his house on Mountain Hill. Dr. Painchaud, a leading French physician, hearing of this, offered to lend Dr. Douglas, "a small building adjoining his residence as lecture and dissecting rooms; on condition," says Dr. Douglas, "that I gave to him and to his son free admission. I very gladly accepted his timely offer and used it for many years."

Previous to this, in 1823, Dr. A. von Iffland had, with Dr. Blanchet and several others, established the Quebec Dispensary, and had given a course of lectures on surgery, medicine, anatomy and physiology. This dispensary was obliged to close after two years because of lack of funds. The Duke of Richmond had contributed largely to its support.

Dr. Jacques Labrie, a graduate of Edinburgh University, wrote a "History of Canada," which was unfortunately destroyed by fire at St. Benoit during the Rebellion of 1837. He was a member of the House of Assembly.

In the same year that the medical journal and medical lectures were inaugurated, a medical society was formed at Quebec, and in one of the minutes of a meeting of this Society, these three events were referred to "as remarkable in the scientific history of Quebec." This society was known under the name of the Quebec Medical Society, and its formation seems to have happily escaped the spirit of division which so marked that of the Montreal society which was formed at a later date. The first president of the society was Dr. Joseph Morrin; Dr. C. N. Perreault was vice-president and Dr. Xavier Tessier was secretary. The laws of the Medical Society were published in 1830.

The Literary and Historical Society played an important part in the history of Quebec and was formed two years before the Medical Society. It was founded in 1824 by His Excellency, the Earl of Dalhousie, and Dr. John Charlton Fisher. The society's aim was to encourage literature and science, but in its transactions other curious and interesting matters found their way, and, thanks to the "Ordinance" which was passed in 1790 at Quebec, by which all the ancient documents of the French régime had been preserved, many of these important documents appeared in the *Transactions*. From time to time many well-known members of the medical profession contributed papers to this society. Dr. Joseph Skey, inspector of hospitals, was chairman of the Natural History Section. Dr. William Kelly, surgeon R.N., contributed several interesting and valuable papers, one "On the Medical Statistics of Canada." In another paper, on the climate of Canada, he quotes Humboldt as saying, "Quebec has the winter of St. Petersburg and the summer of Paris." In one of the later numbers of the *Transactions* there is a paper by Dr. Archibald Hall, on the Georgian Springs. A great deal of attention was given at this time to the different mineral springs throughout Canada and an analysis of the water was often published in full. The village of Varennes was a favorite resort of Montreal people for its mineral springs.

A very full account is also given in these *Transactions* of the epidemics which appeared between the years 1775 and 1786 at Mal Baie, then rapidly spreading to other parts of the province. To a student of Canadian archeology the *Transactions* are fascinating, and one feels tempted to notice many other interesting details.

This society flourished for many years and then lapsed into obscurity, but was restored to its former place by Dr. Anderson who became its president and contributed many papers on Canadian history. Before coming to Quebec, Dr. Anderson was the medical officer of the Port of Pictou, Nova Scotia, during that dreadful summer of 1847 when typhus fever spread throughout Canada to such an alarming extent.

As far as can be ascertained Dr. Kelly was the first to undertake an investigation on the medical statistics of Lower Canada. He obtained his information chiefly from the journals of the House of Assembly, and not from the Parochial Registers in Manuscript, which had been carefully kept by the clergy. By the census of 1831 the total number of persons in the province was about 554,321. Deaf and dumb, one in 1244, and the proportion of insane was one in 549.

1820 to 1827	Fevers		Pneumonia		Rheumatism		Phthisis and hemoptysis		Catarrh, acute and chronic		Dysentery and diarrhea		Other diseases		Total	
	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died
Quarter																
1st	332	10	246	5	101	0	41	20	349	5	109	1	1,808	15	2,986	56
2nd	747	3	328	14	163	0	39	27	365	3	176	0	2,034	11	3,852	58
3rd	1,051	9	189	9	158	0	21	17	245	1	659	1	3,057	23	5,380	60
4th	539	13	216	2	128	0	29	10	274	1	251	0	2,214	17	3,651	43
Total....	2,669	35	979	30	550	0	130	74	1,233	10	1,195	2	9,113	66	15,869	217

FIG. 3. DR. KELLY'S TABLE

In trying to trace the diseases which caused such an increase of mortality during the summer months at Quebec, he visited the Hôtel Dieu and the General Hospital. Dr. Kelly was, however, disappointed in obtaining the information he sought, as persons suffering from infectious diseases were not admitted to these hospitals. He next visited the Emigrant Hospital; the records had, however, been so badly kept in the early days that he could obtain but little information here. Most of the mortality among the emigrants appeared to be from fever and dysentery. Later, smallpox and cholera carried off hundreds.

Through the kindness of Dr. Skey, inspector of military hospitals in Canada, Dr. Kelly obtained access to the medical records of the army, and he says:

> As the information they contain is most accurate, and as the health of the troops in each year bears a relation to the general health of the Province, their records are very valuable in assisting us to form an opinion respecting the diseases of the different seasons. The following table shows the hospital admissions and deaths in the Army in Lower Canada, during each quarter of the year from 1820–1827. [Fig. 3].

The greatest number of deaths from diseases not specified were fourteen from apoplexy; eight from smallpox; six from enteritis; six from dropsies, six from wounds and accidents, and four from atrophia. Then he goes on to say that the mortality from pneumonia was greater in the spring and summer than in the winter. In a second table, showing the different diseases in all the military hospitals in Canada, from 1810 to 1822, we find that the deaths from consumption bore a much smaller proportion to the whole mortality than from 1820 to 1827. His further remarks on consumption are worthy of note, as this is probably the first instance of any statistics of the disease being recorded.

> The deaths from phthisis in the Army in Canada from 1820 to 1831 were 33 per cent of the whole mortality. In the first period the amount is under 10 per cent, in the last 34. Excluding from the former the returns of 1812 to 1815, when the war and its consequences added so much to the whole mortality, the proportion of deaths from phthisis is still only 12.6 per cent. As it seems very difficult to account for such a disparity in the proportion of deaths from phthisis in men under the same circumstances, we might suspect that it arose from diseases of the chest not being so accurately distinguished formerly as they had been of late. But, if any error in this respect existed, it would, most probably, be rather in applying the name of consumption to diseases which do not strictly come under that head than in withholding it, and so far would tend to lessen rather than increase the disparity. If, in order to avoid any error which might arise from this cause, the deaths from all diseases of the chest in both periods are compared, they are found in the first to be 29.2 per cent of the whole, but deducting the period of war as before, 43.5 per cent. Thus, whatever the cause may be, the deaths from pulmonary disease appear to have increased.

In Dr. Kelly's closing remarks he deplores the high death-rate in the towns of Lower Canada. In what condition then were these towns? The city of Quebec was considered healthy and but little attention was paid to hygienic matters. Nevertheless when a comparison was made between the high death-rate in the town and that of other places this illusion was dispelled, and with the dread of cholera and smallpox before them, the authorities began to pay more attention to hygiene. The public sewers were in such a disgraceful state that some of the houses in the principal streets were at times scarcely inhabitable. In the lower town matters were worse, the streets were very narrow and dirty and the houses with their high, pointed roofs were huddled close to the shore. Many of the sewers from the upper town emptied into the streets of the lower town in a most offensive way. There was but little lighting and no general system of police. Murderous attacks were frequent at night, and at last some of the citizens formed themselves into a band and patroled the streets at night, until matters improved. About 1832, the suburbs of Quebec and adjacent parts were overrun by a band of robbers and murderers, so skilfully organized that it was not until 1837 that the captain of this band and his associates were captured and sent in irons to Van Dieman's Land. Nineteen of this murderous gang were transported.

Hull[10] mentions the condition in Quebec:

> Towards the end of April the townspeople began, according to a law of the Province, to break up the ice and snow from before their doors and by the first week in May the streets are tolerably cleaned. The intermediate state, as may be supposed, is a perfect chaos.

He calls the lower town "snug and dirty."

The dread of epidemics roused the people to the true state of affairs and they demanded that the streets be paved and kept in a cleanly manner and that a better system of drainage be installed. They also asked that water pipes be laid through the town. "If Montreal could have water, why not they?" The cause no longer held good that the severity of the cold was such as to prevent this being done.

Dr. Doughty has grouped the epidemic diseases in Quebec in the following classes: (1) Epidemic diseases commonly known as summer complaints, grippe, eruptive fevers, scurvy, whooping-cough, diphtheria, and erysipelas. (2) Pestilential diseases, such as Asiatic cholera. (3) Accidental diseases, such as epidemic cerebrospinal meningitis. Those that caused the greatest ravages were Asiatic cholera, smallpox, scarlet fever and diphtheria. Leprosy appeared about the year 1816 at Tracadie, Gloucester County, New Brunswick.

Hygienic matters in Montreal were about the same as in Quebec, the same ill-paved streets and bad drainage were tolerated. The supply of water in Montreal was better than in Quebec, for as early as 1801 the first water pipes were laid. These pipes, when taken up in 1819, were found to be well preserved. They were made of spruce logs, about six feet in length, and the smaller end of each log was so cut as to be wedged into the larger end of the next log. By 1839 Montreal had one of the best water supplies of any city on the continent. Some of these pipes have lately been presented to the Hygiene Museum of the Medical Faculty of McGill University. They were dug up during the widening of St. Antoine Street.

Dr. Henry, writing in 1830, when his regiment, the 66th, left Quebec for Montreal, complained that the water disagreed with strangers for the first week or two but on the whole they found Montreal a healthy place to live in. He tells us, however, that his friend, Dr. Kelly of the Royal Navy, shows by his statistics that life was shorter in Montreal than in Quebec.

In 1842 a new system of drainage was commenced. The opening up of the old drains greatly increased the city's death-rate at the time. After the laying of the new drains the city was thought to be nearly perfect, for we read: "The city is now a city of splendid cleanliness, vying with those of America and Europe." They must have had poor ideas in those days of what perfection of cleanliness meant, for Montreal never had any claim to rank in that respect with the cities of the United States. Dr. Reid[11] mentions the fact that "every householder had to keep free from filth, mud, dust, rubbish, straw or hay one-half of the street opposite his own house." In 1815 part of St. Paul Street was lighted by lamps; by the end of the year the whole street was thus lighted, and Notre Dame street soon emulated the example of its neighbor.

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[10] Hull. Travels in Canada and the United States.

These sanitary measures were only brought about by the most strenuous efforts of the medical profession. They had a constant battle with the authorities about the drainage and cleanliness of the streets. If more attention had been paid to sanitary matters the loss of life from the cholera epidemics, the greatest of which commenced in 1832 and lasted until 1854, would not have been so heavy.

At the close of the war of 1812–15, English emigration, which had ceased during these years (in 1813 there were only nine vessels having emigrants; in 1816 there were sixty-three), commenced once more. Owing to the overcrowding and unsanitary conditions on the vessels the emigrants brought a great deal of sickness with them, so that many persons died of the dreaded emigrant fever, similar in many of its features to the deadly plague. It was not until 1849 that the government awoke to the great necessity of inspecting these emigrant ships. The duties of the inspectors were to limit the number of passengers and to examine the provisions, water, conveniences for cooking, and ventilation, and also to have a surgeon on board. These surgeons were to be taken from the Navy Medical Department, the period of service on such ships to count as service on their own ships. Although the Passengers' Act was passed it was not at all times carried out. Sometimes as many as forty deaths would occur from typhus fever on a ship containing five hundred emigrants, and the conditions on board were terrible. The medical superintendence was also defective; occasionally the so-called surgeon was but a student with very little knowledge of medicine. On one ship which had just arrived at Quebec, it was found that several of the passengers had their limbs bandaged for supposed fracture; the captain's arm was in a sling, but on examination there was found to be nothing the matter with it beyond a slight bruise. The surgeon being called to explain said: "I assure you the tibia and fibula are broken!" A great deal of disease was carried to the towns and villages by these emigrants who were allowed to land in a diseased state. In 1885 the Merchant Shipping Act came into operation:

> By the 15th and 16th Vic.: cap. xliv, every passenger ship is bound to carry a duly qualified medical practitioner, in the following cases: 1. When the duration of a voyage exceeds in a sailer 80 days, and in a steamer 45 days and the number of persons on board (including crew) exceeds 50.
>
> 2. When the voyage is to North America, and the passengers exceed 100 adults, and the space for each is less than 14 feet.
>
> 3. Whatever the destination or the space, the number of persons on board exceeds 500.
>
> Penalty £50. But by the Merchant Shipping Act (1854), clause 219, to come into operation 1st of January, 1855, it is provided that the following ships shall carry on board, as part of their complement, some person duly authorized by law to practise as physician, surgeon or apothecary:
>
> 1. Every foreign-going ship having 100 persons or upwards on board.
>
> 2. Every ship having 50 persons or upwards on board, which is bound on a voyage from the United Kingdom to the eastward of the Cape of Good Hope or, to the westward of Cape Horn, or, to any place on the west coast of Africa, or, the east coast of central or, South America or, to the Falkland Island. Penalty, £100.

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[11] Reid, J. Foundations of the City of Montreal.

With the coming of the British, Montreal underwent, within the first quarter of the new régime, a wonderful improvement. By 1792 its population was greater than any other city in Canada and its merchants were among the wealthiest. The city's rapid progress has few comparisons. It was no longer confined within the walls, handsome residences were built at the foot of the mountain surrounded by cultivated fields and gardens. Many of these belonged to merchants who had amassed wealth in the fur trade. Situated as it is Montreal had long been the chief doorway to this lucrative trade. Even before the close of the eighteenth century there was a public library and some of these books are still to be seen in the Fraser Institute.

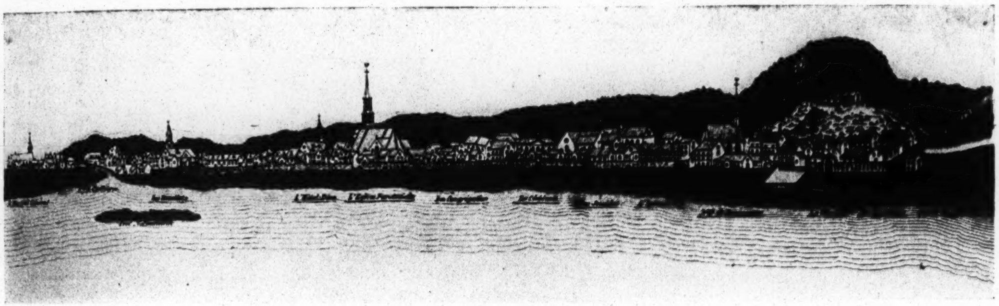

Fig. 4. Montreal. View from Île Ste. Hélène
(After a Print Published in London, 1803)

New laws were made to encourage immigration and education. In the year 1801 the lieutenant-general of the province announced to the house of assembly that it was the intention of His Majesty that a suitable proportion of the lands of the crown should be set apart for a university and in that year the Royal Institution for the Advancement of Learning had been formed by a Provincial Statute,[12] the Charter being granted in 1821 by His Majesty, George IV.

Desultory attempts had already been made to give lectures and special instruction to small classes. Dr. Shakel's series of lectures on natural philosophy as early as 1813 was an instance. Dr. Shakel was a well-known character in the early part of the century. He was the head master of the Royal Grammar School and was a man of wide culture. The school was on Fortification Lane, a short distance east of Place d'Armes Hill, and it was here that so many of those who afterwards became the leading citizens of the city received their education.

In 1817 Dr. Andrew Smythe, a retired army surgeon who had commenced practice in Montreal in 1816, gave a course of lectures on anatomy and surgery at his house on the corner of St. Gabriel Street. These lectures were illustrated by a series of anatomical preparations.

Students had in those days but few textbooks, relying mostly on notes from the lectures delivered to them. Most of these early notebooks are beautifully written.

In 1819 Dr. Sleigh lectured on anatomy, surgery and the practice of physic.

Shortly after this the Montreal General Hospital was established and Dr. Stevenson began giving regular courses of lectures at the hospital on anatomy, physiology and surgery, while Dr. Holmes gave a course of lectures on chemistry at Dr. Shakel's school.

Quebec had its Emigrant and Marine Hospital but many of the emigrants came straight to Montreal and consequently the need was felt for some suitable place where the sick would be properly attended to. The Montreal Emigrant Society did splendid work in assisting poor emigrants and in the year 1832 forwarded to their destination 10,744 emigrants, at an outlay of £2,126 11s. 4d. Up to this time the English residents of Montreal had no hospital of their own.

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[12] George III, 41.

The Hôtel Dieu was, like most of these early hospitals, rather the abode of the poor and incurable, and did not admit patients suffering from certain diseases. In this critical state of affairs when every ship load brought out those who required immediate attention with no hospital to receive them, Dr. T. P. Blackwood and several other well-known medical men of the city came forward and offered their professional services if a house were procured for them.

This was immediately done through the courtesy of the Female Benevolent Society, who placed at the disposal of the physicians a small house of four rooms in the St. Joseph Suburbs, which they had rented for the purpose of assisting poor immigrants who were flocking to the city. But although the society had assisted these immigrants with money and a place of shelter, the much-needed medical attendance was lacking until the society offered the use of these rooms. This Society afterwards undertook to receive convalescents from the Hospital when room had to be made for new arrivals. Here they were kept free of charge until they became fit to earn a livelihood. The house was called "The House of Recovery." This building soon proved to be too small and a larger one was taken on Craig Street. It consisted of three wards to accommodate about twenty-four patients. The expense of moving and rent was covered by a sum of money raised by a subscription list sent round the city. The place was ready for patients in May, 1819, when the name, House of Recovery, was changed to Montreal General Hospital.

Everything was arranged on a systematic basis, a housekeeper was provided and the medical and surgical wards were placed under careful supervision. A code of rules and regulations was drawn up and approved by a committee and nothing was left undone in the initial stage which could be conducive to the perfect routine of a well-ordered hospital. Quarterly reports were issued by the committee. From this small beginning grew the now famous hospital. In these first years of its existence it was an experiment; the public anxiously awaited results. At the end of the second year, after moving into the larger house, the results were so gratifying that the public felt that it must be conducted on a still larger scale. It was now no longer an experiment; it had proved its usefulness and the general decision was that it should become a permanent institution. In August, 1820, through the generosity of three citizens, Messrs. John Richardson, William McGillivray, and Samuel Gerrard, ground was purchased in the St. Lawrence Suburbs and preparations were at once begun for the erection of a hospital. It was in this very place that M. de Maisonneuve built his third redoubt in 1659 and gave it in charge of his lieutenant, Lambert Closse, who left the fort and went to live there. A special committee was appointed in January, 1821, to superintend the plan and collect money to defray the expenses of building the hospital, consisting of John Richardson, Rev. John Bethune, Dr. William Robertson, John Molson, Sir David Ross, John Fry and Alexander Skakel. Mr. Thomas Phillips, the architect, was allowed fifty pounds to superintend the building but this amount he handed over to help defray the cost of building. The founder of the present Redpath family of Montreal was the contractor for the masonary work. The estimated cost of the building was £2,200. Subscriptions to the amount of £2,167 10s. were secured from the English citizens. The building of the hospital, however, cost much more than the estimated cost, namely, £5,856 8s. Within a year this debt was discharged through the generosity of that worthy citizen, John Richardson, who had already done so much for the advancement of the city of Montreal.

On the recommendation of Lord Dalhousie the provincial legislature granted the sum of £850 to defray the annual expenses of the hospital. A further gift of £100 received from the estate of Mr. David, enabled the committee to purchase a building next to the hospital. The staff consisted of Drs. Robertson, Caldwell, Holmes, Stephenson and Loedel. Dr. Stephenson acted as house surgeon; there were also a matron, three nurses and an apothecary.

The foundation stone was laid with great masonic ceremonies on June 6, 1821, by the celebrated Sir John Johnston who, at the time of the American Revolution, brought a large body of the United English Loyalists from the Mohawk Valley and settled in Upper Canada. Sir John Johnston lived at one time in Montreal and had a house with a garden on the site of the Bonsecours Market. One of his descendants, bearing the same title, is now residing in Montreal.

In the McGill Medical Library is the original manuscript of the first report of the hospital showing the different diseases which were treated from May 1, 1822, to May 1, 1823. The list shows that 412 cases were treated, with thirty-six deaths during the year. In this report the nurses are instructed to be "clean and decently clad."

In 1818, previous to the founding of the Montreal General Hospital, Andrew Smythe, a retired army surgeon, had written to the government about establishing a hospital for the poor.

Nearly a century ago Montreal had its first English hospital. It has grown with the city, humble in its beginnings, and now occupying a position second to none in Canada. Subsequent events have proved that this hospital with its famous traditions has been worthy of its founders. This marked the first great step in the progress of medicine in Canada. Owing to its inception the medical college became possible; the idea of giving a systematized course of lectures originated with the doctors composing the medical board of the hospital.

Some months later the officers of the medical board of the hospital met and considered the question of starting a regular medical school, formed along the lines of the Edinburgh Medical School, which was then coming into great notice.

No time was lost by this little band of pioneers in medicine in carrying out the second great undertaking, and the first organized lectures were given in 1823, at No. 20 Little St. James Street. It was not until 1824, however, that the new school was really opened under the name of the Montreal Medical Institution. The founding of this school was watched with great interest by not only those in Montreal, but in Upper Canada as well. The young men realized that now they would be able to get their medical education in their own country, and in course of time many of the Upper Canada men became graduates of the McGill Medical Faculty. The first regular session of 1824-5 was attended by twenty-five students; unfortunately the records of the previous session are not available. The staff of this new school was practically the same as that of the Montreal General Hospital—Drs. Holmes, Caldwell, Stevenson and Robertson.

Canadians cannot but feel proud when they realize how much has been accomplished in less than a century. From the first quarter of the nineteenth century when laws regulating the practice of medicine began to be made, steady progress has been made towards the ideal. Canada has provided well-equipped men, who in their character, training and disposition were worthy of the great trust reposed in them in the bettering of medical education. They gave a whole-souled devotion to their work. Their enthusiasm and devotion were in turn communicated to their students and those students, who in turn were to become teachers, seemed to be embued with the same love of their work and followed in the footsteps of their masters. The first four physicians of the Montreal General Hospital and the Medical Institution must ever be accounted by Canadians as men who filled a high position with great ability. As Dr. Howard remarked: "Too much stress cannot be given to the fact that the existence of McGill University is largely due to these men."

In the first quarter of the nineteenth century Edinburgh had the most famous schools in Great Britain. All good scholars flocked to Edinburgh. Not only were the best teachers of the day to be met there but clinical teaching was far in advance of the London hospitals. That famous fighter for medical education, Thomas Wakley, had not as yet succeeded in reforming medical schools and the examining bodies of London. It was not until 1858 that the Medical Registry Act was passed and the General Medical Council formed.

James Gregory with his wide influence, Charles Bell, James Syme, John Brown, and Robert Christison were some of the teachers. Those Canadians who returned to practice in their own country realized the great necessity of regulating and systematizing medical education and it seems singularly appropriate that the two young physicians fresh from Edinburgh should be chosen as two of the teachers in the medical school. Brought up in a new country, in an atmosphere of simplicity which favored a high seriousness of life, and where the cult of scholarship was real, keenly alive to the responsibilities resting upon them for placing medical education on a high basis, Canada ought to be thankful to these men who led the way in the pioneer days of medicine.

So Montreal became, in a lesser degree, the Edinburgh of Canada. Students began to come to Montreal for their medical training, knowing they would be well taught.

On October 20th, 1822, a meeting of the medical officers of the hospital was held, consisting of W. Robertson, W. Caldwell, A. F. Holmes, J. Stephenson, and H. P. Loedel, for the purpose of taking into consideration the expediency of establishing a medical school in this city in which it was unanimously resolved "that the considerations which seemed to warrant so desirable an object should be drawn out and laid before the next meeting of the Board to be held on the 27th of the same month, and that Drs. Stephenson and Holmes be appointed a Committee for that purpose.

Such then was the actual commencement of this school of medicine; and I imagine that it will prove a matter of no little curiosity to see upon what reasons their conduct was subsequently based, a fact in which not themselves alone were immediately concerned, as far as we may glean from the subsequent proceedings, but one in which other eminent individuals of this city were at the time intimately interested, doubtless from the influence which it might exert upon their own children at the time. At a meeting of the same Board held on the 27th of October, 1822, the same officers present, the subjoined resolutions were adopted:

The medical officers appointed by the President and Directors of the Montreal General Hospital, having seen the great difficulties which the student in medicine in this country has to encounter before he acquires a complete knowledge of his profession; knowing the great inconvenience resulting to many from the necessity at present existing of spending several years in a foreign country to complete a regular medical education, and being convinced of the advantages which would result from the establishment of a medical school in this country, have met to consider of the possibility of founding such an institution in this city. After due deliberation they conceive that the following considerations warranted an endeavour to promote so desirable an object:

1st. There can be but one opinion concerning the utility and necessity of a School of Medicine in this Province, seeing that the condition of medicine in many parts sufficiently attests the want of opportunities of medical instruction. Such an institution will tend very much to remove this growing evil, by the facility it will afford of acquiring medical knowledge.

2nd. There can be little doubt that students from different parts of this Province, as well as from Upper Canada, and probably from the adjoining States, would eagerly profit by the opportunities thus afforded of acquiring a sound medical education. Those who might not intend to pursue their studies at a foreign university would be enabled to obtain an adequate knowledge of all the useful branches of medicine, while those who, after attending this institution, might wish to enjoy the advantages of studies in other countries, would be better able to benefit by them.

3rd. They consider that the Montreal General Hospital is an institution which much favours the establishment of a school of medicine in this city. It affords the student a facility of acquiring a practical knowledge of physic never before enjoyed in this Province, an advantage which will be greatly enhanced by the establishment of lectures on the different branches of the profession.

4th. If such a plan could be carried into effect, a pecuniary benefit would result to the funds of the Hospital, highly advantageous in their present state.

5th. They are further encouraged to attempt the formation of a medical seminary, when they reflect that the Medical School of Edinburgh, the basis of which they would adopt for the present institution, now justly considered the first in Europe, is of comparatively recent formation, it being little more than one hundred years since medical lectures were first delivered in that city. And the early history of the Royal Infirmary of Edinburgh is not dissimilar to that of the Montreal General Hospital.

6th. In the event of the establishment of a Classical and Philosophical Seminary in this city, the two institutions would be materially benefited.

7th. To ensure the success and permanence of such an institution, it would be highly desirable that the persons composing it should be associated by Royal Charter or act of incorporation.

8th, and lastly. Should such a desirable object be attained, the following gentlemen, in furtherance thereof, have agreed to deliver lectures in the several branches of the profession:

Anatomy and physiology.........	Dr. Stephenson,
Chemistry and pharmacy.........	Dr. Holmes,
Practice of physic...............	Dr. Caldwell,
Midwifery and diseases of women and children..................	Dr. Robertson,
Materia medica.................	Dr. Loedel,
Botany.........................	Dr. Holmes,
Surgery........................	Dr. Stephenson.

It was finally resolved that the foregoing resolutions and opinions be forwarded to His Excellency, Lord Dalhousie (then Governor-in-Chief), for his consideration.

On the 30th of November, 1822, a letter was received from His Excellency, through his secretary, Mr. Cochrane, approving, among other matters, "of the scheme proposed by the medical officers of the Montreal General Hospital for connecting with that establishment a medical school for giving a course of lectures in the different branches of medical science." The letter further remarks that, "His Excellency will readily give his support to this desirable object, and will do all in his power to assist the endeavours of the medical gentlemen who have come forward in so liberal a manner."

On the 4th of February, 1823, at a meeting of the gentlemen aforesaid, it was resolved to issue an advertisement to be published in the principal Upper and Lower Canada newspapers, announcing the organization of the "Montreal Medical Institution," and the intended delivery of a course of lectures during the subsequent winter. The advertisement, which before publication was sent to the Governor-in-Chief for his approval, which was cordially granted and which was the first public announcement of a course of medical lectures in this Province:

MONTREAL MEDICAL INSTITUTION

The medical officers of the Montreal General Hospital having seen the great difficulties, which the student of medicine in Canada has to encounter before he can acquire a competent knowledge of his profession: knowing the inconvenience resulting to many from the necessity at present existing of spending several years in a foreign country to complete a regular medical education; considering that the recent establishment of the Montreal General Hospital affords the student a facility of acquiring a practical knowledge of physic never before enjoyed in this Province, and that this advantage will be greatly enhanced by delivering courses of lectures on the different branches of the profession, held a meeting to consider the practicability of founding a medical school in this city.

The circumstances which rendered the success of such an institution probable, and the measures intended to be adopted for carrying the same into effect, having been submitted to His Excellency the Governor-in-Chief, he was pleased to signify his entire approbation of the plan.

It is therefore resolved to deliver lectures on the following branches of the profession, to commence on the second week of November next ensuing:

Anatomy and Physiology.....	J. Stephenson, M.D.
Chemistry and Pharmacy....	A. F. Holmes, M.D.
Practice of Physic...........	W. Caldwell, M.D.
Midwifery and diseases of women and children.......	W. Robertson, Esq.
Materia medica.............	H. P. Loedel, Esq.
Surgery....................	J. Stephenson, M.D.
In the course of the summer, 1824:	
Botany.....................	A. F. Holmes, M.D.

Montreal, February 4th, 1823.[13]

The curriculum at this period counted but four chairs, the practice of medicine, chemistry and materia medica, midwifery, and anatomy and surgery. The two last mentioned were subsequently divided and soon chemistry and materia medica were taught separately, as was anatomy, while surgery was united to medicine. In 1842 the latter connection was severed and each constituted an independent department.

[13] Minutes of the McGill Medical Faculty.

Three years afterwards clinical medicine and surgery, the institutes of medicine (which comprised histology, physiology, general pathology and therapeutics), medical jurisprudence and botany were super-added and in the next session clinical medicine was separated from clinical surgery.

In these early days the McGill Medical Faculty was noted for its self-supporting and independent character. The doctors cared less for money and more for the tone of their Faculty, and by the addition to the teaching staff of such men as Drs. Bruneau, Macdonnell, Sutherland and Fraser, the same high standing was maintained.

The summer session of 1847 commenced on the second Monday of May. The announcement reads: "Students who are desirous of boarding in the college will require to furnish themselves with bedding and the usual bedroom furniture." Another item of interest in these days of expensive living is worthy of note: "The price of board, including lighting, heating and attendance, exclusive of washing, has been fixed at $13.00 per month, always payable in advance."

In 1848 the course of study was extended from three to four years, this was to take effect on those candidates commencing their studies subsequent to May, 1849. Botany, medical jurisprudence, clinical medicine and clinical surgery were made compulsory. Students belonging to the Province of Quebec had to pass their preliminary examinations before the council of the College of Physicians. Dr. Sewell, who lectured on materia medica, left to accept a position at Bishop's College, Lennoxville; Dr. Hall succeeded him. Dr. Sutherland, lecturer on chemistry in the School of Medicine and Surgery, was appointed to Dr. Hall's former position.

Every candidate for the degree had to write a thesis on medicine and surgery, in Latin, English or French. The fee for the degree of Doctor of Medicine was five pounds, and five shillings for entering the same into a register kept by the dean.

We are fortunate in having in our collection of early medical documents the first diploma given by the Faculty. It is not on parchment but on ordinary paper the size of foolscap and written in the neat, legible handwriting of Dr. Robertson. This diploma was presented to W. L. Logie in the year 1833 and through the kindness of Dr. Shepherd was donated to the collection by Angus Hooper, Esq., a grandson of the late Dr. W. Robertson.

The diploma reads as follows:

DEGREE

Doctor in Medicine and Surgery

We, the Undersigned, Principal and Professors of the University of McGill College, do hereby certify that Mr. William L. Logie of the City of Montreal, having been deliberately examined on the different branches of Science connected with Medicine and Surgery, having satisfactorily defended before the Medical Faculty his inaugural dissertation on Croup, is in conformity with the Statutes, Rules and Ordinances of the said College, declared Doctor in Medicine and Surgery, fit and qualified to practice Medicine and Surgery in all their branches.

We therefore admit him to be a graduate of this University and authorize him accordingly to practice Medicine and Surgery.

In witness whereof we have hereunto subscribed our names and affixed the seal of the College at the University of McGill College the 24th day of May in the year of our Lord one thousand eight hundred and thirty-three.

Certificates

Montreal, 20th March, 1833.

I do hereby certify that Mr. William L. Logie attended during five successive years the different lectures delivered by the Medical Faculty of the University of McGill College, the Medical and Surgical practice of the Montreal General Hospital, and Practical anatomy, all as required by the Statutes, Rules and Ordinances of the said University entitling him to be passed as a candidate for the degree of Doctor in Medicine and Surgery.

(Signed) J. Stephenson, M.D.
Secretary Medical Faculty.

MONTREAL, 23rd March, 1833.

This certifies that Mr. William Logie sat under me as an indentured apprentice in the different branches of medical and surgical science during five successive years.

(Signed) W. ROBERTSON.

In medical ability and indefatigable energy William Robertson, William Caldwell, John Stephenson and Andrew Fernando Holmes stand forth from the pages of the past as the fathers of medicine in Canada.

William Robertson was born in Perthshire, and graduated from Edinburgh University with honors. Immediately after graduating he was appointed to the 49th Regiment as assistant surgeon. In the year 1806 he was at Cape Breton with his regiment; he was then appointed to the 41st Regiment as surgeon and served through the campaign of 1814, being present at the storming of Fort Niagara. After the cessation of hostilities, Dr. Robertson settled in 1815 at Montreal, where he soon had a large practice and became one of the most popular of physicians in the city. He was a man of great ability and an accomplished surgeon and was held in high regard by his fellow practitioners and all who came in contact with him.

William Caldwell was born in Ayrshire in 1782 and graduated from Edinburgh University. He was appointed surgeon to the 13th Regiment of Dragoons and served in the Peninsular War on Lord Aylmer's staff. He is thus described by one of his pupils, Dr. David: "The sweetest of dispositions, which belied his severe military courage, as one thing was well known to all and that was that Dr. Caldwell was a high-minded polished gentleman, and constantly cooperated with his colleagues in the arduous work of founding the medical school." He died January 23, 1832 or '33, at the age of forty-eight, of typhus fever brought on by overwork during the cholera epidemic.

Mr. E. T. Fletcher[14] mentions a Dr. Caldwell living on Palace Street in 1827:

The next house below (Mr. Fletcher's) was Dr. Caldwell's whose brother, then in Montreal, was also a doctor and had attended my father, in the West Indies. On the same street was the house of Dr. Painchaud, a worthy and somewhat eccentric practitioner of the old school.

Dr. Painchaud's son was at Dr Wilkie's school with Mr. Fletcher. Palace Street was one of the principal streets in Quebec.

The ship in which the parents of Andrew Fernando Holmes were coming to Canada was captured by a French frigate and taken to Cadiz, where he was born in 1797. He was four years old when the family finally succeeded in reaching Canada, where they settled in Montreal. At the age of fifteen Holmes was indentured to Dr. Arnoldi, Sr. with whom he remained until he left for Edinburgh to complete his studies. With him went his friend, Stephenson. While at Edinburgh, Holmes became passionately attached to the studies of mineralogy and zoology, he spent his spare time in wandering about the precincts of Edinburgh and succeeded in collecting some fine specimens of native plants and minerals. After graduating from Edinburgh in 1819, Dr. Holmes and Dr. Stephenson attended lectures and the charitable hospitals in Dublin, London and Paris. These two young men then returned to Montreal where they commenced to practice. Dr. Holmes entered into partnership with his former teacher, Dr. Arnoldi, a partnership which lasted for five years. For nearly twenty years Dr. Holmes was attending physician to the Montreal General Hospital. Dr. Holmes was a student, a physician and botanist, and the author of numerous articles. He made a collection of the flora of Montreal and its environs, to which he devoted five years of hard work. In 1853 Dr. Holmes was elected president of the College of Physicians and Surgeons and was twice reelected to the same position.

Dr. Hall gives a biographical sketch of the late A. F. Holmes, M.D.:

If there was one part of the appurtenances of the Faculty in which Dr. Holmes took a greater delight than in any other, it was in the Library, and the present excellence of that valuable library is entirely the result of his superintending care. Although not virtually the registrar, or librarian, he yet performed for years the functions of these offices, while to his duties as Dean he associated also that of treasurer, so strict was he in this latter capacity, that he was accustomed to make entries there of a sixpence.

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[14] Fletcher, E. T. Reminiscences of Old Quebec, *Canadian Antiquarian and Numismatic Journal*, July, 1913.

He was the author of several important papers, which from time to time appeared in the medical periodicals. His first paper was "On the Intra-uterine Crying of the Child," published we believe, in the year 1822 or 1823 in the *Boston Medical Journal*, Volume eight, numbers four and five. He was the first to direct attention to this very important fact. He wrote on Asiatic Cholera, as it appeared in Montreal in 1832, and Choleraic Diarrhoea.

John Stephenson was born in Montreal in 1797. His father, John Stephenson, Sr. came from Scotland and settled in Montreal in 1756, being one of the first three settlers of British birth to settle in Montreal. Dr. Stephenson resumed his education at the Collège de Montreal and in 1815, at the age of eighteen, was indentured to Dr. Robertson, who regarded him as one of his best pupils.

He went in 1817 to Edinburgh where he graduated in 1820. Later he went to Paris and in 1819 passed the examinations of the Royal College of Surgeons of England. In 1821 Dr. Stephenson returned to Montreal, where he lectured on anatomy and surgery from 1824 to 1835.

From 1835 he devoted all his time to anatomy. His death in 1842 was a great loss to the Faculty. He was a warm-hearted, impulsive man. Dr. Stephenson always said that much of the success of his undertaking was due to the wise counsels of Dr. Robertson. He was vigorous, often aggressive, but not always careful in the expression of his opinions, saying what ever he thought was right regardless of criticism. He was a brave man, never faltering in the course he had mapped out.

Dr. Workman said:

McGill College must have been legibly inscribed on the heart of Dr. Stephenson, for it constituted the warp and woof of his thoughts by day and of his dream by night . . .

I well remember his lament over the blank indifference, the chilling discouragement and sometimes even the ill-disguised sneers he encountered in his earnest work, but his strenuous efforts and unflinching courage carried him above all sneers and ill-natured remarks.

James Crawford was born in Donegal, Ireland, in the year 1796, and was the second son of Dr. David Crawford of the Royal Navy. He studied medicine at Dublin, and graduated from Edinburgh University. He became hospital assistant in 1814 to the 24th Foot, and was soon after appointed assistant surgeon of the same regiment. At the close of the war of 1812-15, he remained in Canada and settled in Montreal, where he developed a large practice. He soon had a number of indented pupils, many of whom he taught gratuitously. In 1844 he accompanied Lord Metcalfe, who was then suffering from illness, to England. Dr. Crawford returned in 1852 to Montreal, and was appointed in 1845 to the chair of clinical medicine and surgery at McGill.

Clinical teaching as a distinct branch of education may be said to have been first taught by Dr. Crawford in Lower Canada. His lectures were original and he drew his information from his personal observation. He invented surgical instruments for the compression of arteries and for the adjustment of fractured clavicle. He contributed many articles to the *Medical Gazette*. He wrote an article for *British-American Journal of Medicine and Physical Science* which was noticed by the *Gazette des Hôpitaux* of Paris in 1844, concerning the utility of iodine in smallpox. He was very much attached to the Montreal General Hospital, and it was while returning from there that he met his death. His horse took fright and Dr. Crawford, jumping from the conveyance was thrown heavily to the ground. He died December 28, 1855.

At this time in Montreal there was a noted group of men at the head of medicine. Among some of the best known were: F. C. Arnoldi, D. Arnoldi, B. Berthelet, O. T. Bruneau, W. Caldwell, G. W. Campbell, J. Crawford, A. Hall, A. F. Holmes, W. Robertson, S. C. Sewell and J. Stephenson. Some of these men had already been heard of in foreign parts and more than one Canadian thesis had been noticed abroad: that of Dr. Vallée of Montreal on cancer, written in 1826, was thought worthy of discussion by the Medical Faculty of Paris.

They were men of brilliant talents, who appreciated the value of a sound medical education, and as such they deserve a permanent place in the medical history of Canada. There is no doubt that the high standard set by these pioneer medical men has influenced medicine in Montreal, and helped to give it its present status.

Two of the most important events in its medical history had already taken place in Montreal, the establishment of the first English hospital, the Montreal General Hospital, and the first medical school, the Montreal Medical Institution.

The hospital had now been in existence for ten years, and during these years it gave ample promise of the ultimate high position it was to occupy, not only in Montreal, but throughout the whole of Canada. With what pride must its little band of faithful workers have watched its growing usefulness! The first addition to the hospital was a wing added in 1832, in memory of its first president, the Honorable John Richardson, one of Montreal's oldest and most respected citizens. It was resolved to perpetuate his name in connection with the hospital by building a new addition to be named after him. The public subscribed generously in the city, as well as in Quebec, Toronto and London and in September, 1831, the corner stone was laid. By the 7th of December, 1832, the new addition was ready for patients. With this new addition the hospital now contained nineteen wards and 160 beds. The tablet on the wing reads as follows:

THE RICHARDSON WING
of the
MONTREAL GENERAL HOSPITAL
This Building was Erected A.D. 1832
To Commemorate the Public and Private Virtues of
THE HONOURABLE JOHN RICHARDSON,
A Distinguished Merchant of this City, and Member
of the Executive and Legislative Councils of the
Province.
He was first President of this Hospital, and a Liberal
Contributor to its Foundation and Support.
He was Born at Portsay, North Britain, and Died
18th May, 1831, Aged 76 Years.

It was originally intended to erect a tablet to his memory in the church of England, but the amount collected was so large the committee resolved to build a wing to the hospital, as even then the hospital had become too small for the increasing demands for admission. The staff of the hospital now consists of Drs. Robertson, Holmes, Stephenson, Bruneau, Hall, Campbell, Crawford and Sewell.

The foundation of a medical school in Montreal had given a great impetus to the study of medicine. Each year the school grew in usefulness, but the year 1829 saw a change; it ceased to be an independent school, and became known under the name of the Medical Faculty of McGill University. The founders of the school gave up its identity to save the charter of that university, and it is interesting to note that the university originally owed its existence to a medical man: Dr. Stephenson, when others were indifferent, worked with such energy that he secured the bequest of James McGill for a college, when his will was being almost successfully contested by his heirs.

From the time of this union to the present, the Medical Faculty has been the leading faculty in the university, making the name of the university known far and wide through the names of its teachers, "composed, as it always has been, of men ranking among the first in the profession." The

Medical Faculty has every reason to be proud of the long list of names of its staff, men who set the love of their profession before the gain of money, and it was a common occurrence for them to help out the meagre income of their Faculty from their private means.

As Sir William Osler has expressed it, "Faithfulness in the day of small things may be said to have been the distinguishing feature of the work of the faculty in these early days. The lives of the senior members taught us youngsters the lessons of professional responsibility and the whole tone of the place was stimulating and refreshing." Again, Sir William Dawson, in his address at the Semi-Centennial, stated: "They were able and good lecturers, fit men to make the beginning at such kind of work," and then he mentions the names of Drs. Holmes, Campbell, Hall, Bruneau, Fraser, etc.

The charter of McGill University was granted in 1821, but for eight years, the property bequeathed by James McGill was in litigation and it did not come into the possession of the Board of Governors until 1829. The University was then opened on the 29th of June in the home of the founder, Burnside House.

The first session of the Medical Faculty of McGill took place in the winter of 1829–30. In the session of 1830–31 the students of the Medical School formed themselves into a medical society, the parent of the present fine society.

Before the year 1833, the Medical Faculty moved from its first quarters, No. 20 St. James Street, to a larger house on the same street, which stood between the Bank of Montreal and the cemetery. The school remained there until the year 1843. The winter course lasted from November 2nd to the first week of April, a term of about six months. Five lectures per week were given and two lectures a week in the clinical course.

As the year 1832 marked a great advance in medical education in Lower Canada, so it did in Upper Canada. Especially was this the case in York (Toronto), where medical education was being zealously guarded and advanced by the medical board appointed by the governor. These boards inspected the diplomas of those holding them and examined those students who had secured an indenture.

This medical board had been formed as early as 1818 by an act of parliament and it was within a year or two after its inauguration that it succeeded in having the York Hospital started. About 400 acres of land had been set aside as early as 1817 by an order in council for a hospital.

Dr. Scadding in "Collections and Recollections" describes the hospital:

> The old hospital was a spacious, unadorned, matter-of-fact, two-story structure of brick, one hundred and seven feet long, and sixty-six feet wide. It had, by the directions of Dr. Grant Powell, as we have heard, the peculiarity of standing with its sides precisely east and west, north and south . . . The building exhibited recessed galleries on the north and south sides, and a flattened hipped roof.

In 1824 this hospital was described as one of the largest buildings in the Upper Province, but by 1832 it was found to be too small, so rapidly had the little town of York developed. It was in this same year that the students attending the hospital for clinical instruction, formed the York Students' Medical Society. A librarian was appointed and the sum of four dollars charged as an entrance fee to defray the expense and to assist in binding books for the society. Three years later the medical profession held a meeting at the hospital to form a medical library.

Some dissatisfaction seems to have been expressed by the citizens against the board about the management of this hospital, and one of their complaints was that the said board furnished no public reports.

The medical board of Upper Canada met quarterly for the purpose of examining those desirous of practicing medicine. From the lists which are given of those who passed and those who were rejected, quite a number seem to have failed to satisfy the requirements of the board. Among those who were examined were several from the McGill Medical College; these were granted the license. In 1832 the Board issued a circular urging parents to see that their sons who intended entering medicine should have the best education obtainable, a strong point being made in favor of Latin.

Among other things the board was interested in was hygiene, and the members acted as the Board of Health for York. They waged warfare against the former crude methods of dealing with sanitary matters and urged daily employment of scavengers. Unlike their confreres in Montreal they acknowledged the great superiority of the cities of the United States in matters of sanitation.

Although the progress of York had been greatly retarded by the war of 1812, yet it continued to make such rapid strides that by 1834 it was incorporated as a city under its original name, Toronto. It was known by this name before Simcoe became its governor. The name Toronto occurs in some of the old French documents as early as 1686, and again in 1767, when Sir William Johnston mentions the name Toronto in a despatch to the Earl of Shelburne, and in 1788 the name is again mentioned by J. Collins, deputy surveyor of Canada. From its incorporation as a city to 1844 the population was nearly doubled, there being 18,420 residents in 1844. From this rapid increase one realizes that the duties of the medical board were onerous.

Toronto now possessed a fine hospital, a bank, called the Bank of Upper Canada, which had been opened in 1821 and the beginning of a university, King's College. The project for a university for the town of York had been spoken of as early as 1795 and had been repeatedly urged upon the Home Government by Governor Simcoe. After a long and vehement debate for an endowed university a charter was obtained from George IV on the 15th of March, 1827, for the University of King's College "at or near our Town of York in our said Province of Upper Canada," with power to grant degrees of Master of Arts, Divinity, Law and Medicine. This college was established with certain religious restrictions but in 1834 these restrictions were abolished, and in 1849 the designation of The University was changed to that of the University of Toronto, and the Faculty of Divinity was abolished. In 1853 the university was constituted with two corporations, "The University of Toronto" and "University College."

In 1850 Toronto University made it compulsory for students entering medicine to have a degree in arts.

In 1795 the Provincial Parliament of Upper Canada passed an act,[15] forbidding the sale of medicine, prescribing for the sick and the practice of physic, surgery and midwifery, by any one who had not obtained a license. This act was repealed in the year 1839 and the members of the board were formed into a corporation to be known as the "College of Physicians and Surgeons of Upper Canada," of which the members were to be fellows: all other persons then or thereafter authorized to practice physic, surgery and midwifery were to be members of the college, and the college was to license. Women might practice midwifery and those holding a diploma or license from any British university or from any college or faculty of physicians or of surgeons in the United Kingdom, and also all army and navy surgeons, should receive a license.

In the year 1840 the former act came into force again and a new board was formed.

Sir William Osler wrote:

> As early as 1835–6 efforts were made to induce the Government by Sir John Colborne, to establish a Faculty of Medicine in King's College, Toronto, and elaborate plans were prepared but nothing came of it until 1843 when a Faculty was organized with a full and able staff. A more favourable inauguration of a medical school could not have been devised: with State aid, well-trained and efficient profes-

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[15] Act 35, George III.

sors who were in the receipt of salaries ranging from £225 to £350—fine emoluments for those days. From all I can gather the school was a thoroughly efficient one and did good work in medical education. But the professors made certain mistakes for which they paid heavily—in opposing the incorporation of the Toronto School of Medicine, which had been organized by Dr. Rolph in 1843, they acted most injudiciously and laid the foundation of future trouble. Too many of them were hostile to the professors in their desire for a better medical act. After an existence of ten years an Act of the Legislature left the University of Toronto with only the Academical Department, and swept away a medical school which, whatever its faults, had in it the elements of ultimate success, and left the profession and the public at the mercy of irresponsible schools without foundations and dependent on private enterprise. There could be no doubt that the abolition of the Faculty of Medicine of the University of Toronto retarded seriously the growth of the profession in this country . . .

In Toronto a third school was added to the existing ones in 1850 by the establishment of the Upper Canada School of Medicine which in its first session, became the Medical Faculty of Trinity College, and after an existence of three or four sessions ended in the resignation of the professors, who refused to submit to certain vexatious test exactments of a religious nature demanded by the Corporation.

The Faculty of Medicine of Victoria College was next established in Toronto, for years known as Rolph's school; it terminated its existence in 1869.

Dr. Rolph in 1831 had a large following of private pupils whom he continued to teach until he had to leave the country, being one of the rebels of 1837. He returned to Toronto and continued his teaching. His school was originally at 53 Queen Street and in 1854 removed to Richmond Street between Yonge and Bay Streets. In 1855 it became the Medical Faculty of Victoria University and in 1857 removed to the new college buildings in Yorkville.

Soon too, the Trinity Faculty lapsed (that is in 1856) and advantage was taken of the charter, which Dr. Rolph had obtained in 1851 but which was now no longer needed for his school, to organize a new school, in form and name a continuation of the old Toronto School of Medicine. This began operations in 1857 in affiliation with the University of Toronto, and Dr. Hodder soon took its Presidency. He resigned this position to become dean of the new medical faculty of Trinity University, which was organized in 1870–71, but the Toronto School of Medicine continued under Dr. W. T. Aikins, as President. The first medical journal published in Toronto was the *Upper Canada Journal of Medical, Surgical, and Physical Science*, 1851–1852.

QUARANTINE IN CANADA

We know but little of quarantine under the French régime. It is not until 1720 that any light is shown on the subject. During that year the coast of the Mediterranean was swept by a plague, especially severe at the port of Marseilles.

Although communication between France and her colony was irregular, every year a few ships from these infected ports came to Canada. On October 20, 1721, Governor de Vandrevil and Intendant Begin, began to take precautions to protect Quebec. They issued the new rule that all ships coming from these infected ports should be held at L'île aux Coudres until they should receive permission from the intendant to proceed to Quebec. To announce the coming of a ship the captain was obliged to fire a cannon every quarter of an hour. If there was sickness on board the flag was to be at half mast. Under fine of corporal punishment it was forbidden for any one to land from the ship or to hold communication with any of the inhabitants of the colony. A boat with the custom officers was to approach the ship and ask the captain the following questions: (1) Where do you come from? (2) At what ports did you touch before coming here? (3) Was there any contagious sickness in any of these ports? (4) Had you any sickness on board crossing the ocean? (5) Any deaths? (6) How many? (7) What was the nature of the illness? (8) Have you any sickness now? (9) How many? and (10) What is the nature of the illness? If there was contagious sickness on board the custom officer ordered that all merchandise should be placed on the island and burned. The ships stayed there until they obtained permission from the intendant to land and were allowed to enter the port of Quebec only after the visit and report of a physician who was charged to attend the ship. A description of the method of examination is given in the following account by one immigrant, Bernard Tansey:

> A thousand immigrants were to be passed or banned, according to degree of their fever, and it was impossible that there should be a thorough medical inspection. What they did to test for fever, was to stretch a rope about three feet high across the deck. Those who could leap over were judged well enough to land. Those who could get under it without falling down were also allowed to leave the ship. Here was I, a lad of twelve, who couldn't jump over a rope to save my life, for that was what it meant. My father jumped, my brothers jumped, and my mother and sisters, who were pretty weak, got under safely enough. They were all safely over, and here I was, on the wrong side of the rope. I knew I couldn't leap the thing, so down I got, and tried to dodge under. But just as I was stooping under I stumbled, and down I went on my nose, with never a chance of saving myself.
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> The quarantine officer came up, saw me sprawling before I could pick myself up, and I was sent to stay on the ship with the sick and the dying. When my father sees this, out he pulls a little leather bag where he kept the family fortune, puts a sovereign in the boatswain's hand, and the boatswain picks me up, and swings me into the boat for shore before a word could be said. I'm thinking it was the lucky day for me my father had that sovereign handy. Anyhow, I've outlived the boatswain, the quarantine officer, and all.

During three years the quarantine had lasted only one ship had come from Marseilles. In 1740 Le Rubis with 106 persons on board, all suffering from the plague came in.

Christy[16] makes the following statement:

> The Assembly of Lower Canada, ever since the establishment of the present constitution, has been constantly endeavouring to acquire privileges beyond what was evidently intended by the Act of Parliament of the 51st of His Majesty, to be given to that body. But the disorganizing tendency of these attempts did not become apparent till towards the beginning of the year 1807, when a party was formed under the auspices of a few individuals of desperate fortunes which soon obtained a preponderating influence in the House . . .

One of the many difficulties thrown in the way of the Government by the House of Assembly was their refusing to provide funds from the civil list for the maintenance of a health officer. This necessitated the retirement of Dr. Hackett from the position as officer of health to the Port of Quebec, to which position he had been appointed by the Duke of Richmond. The following letter appears in the *Canadian Archives:*

> June 15th, 1824: Dr. Hackett to Bathurst: Had been appointed and held office of health officer to the port of Quebec up till May, 1822, when his name was erased owing to difficulties raised by the Assembly in providing for the civil list and not from any impropriety on his part nor the utility of the office called in question; the same cause still operates as when the Duke of Richmond made the appointment, when he was induced to give up a lucrative practice on the assurance that the appointment would be made permanent, but he is now left destitute. Begs for the reestablishment of the emoluments (as he still holds the commission) either on the allowance granted by the Duke of Richmond or on the commuted allowance made during part of Dalhousie's administration.
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> The necessity for the appointment, as 12,000 settlers arrive annually, besides other passengers and sailors; sends letter from the head of the medical department of the army to show the necessity for the office.
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> Same to Dr. Hackett.
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> Sends extracts from letter to Sir James McGregor on the subject of the health officer. The disagreements in the Province make it impossible to prevent the introduction of small-pox; all that can be done is to keep it from the troops. The mischief arises from the discontinuance of the health officer. The diseased state of the emigrants allowed to land and to carry disease to almost every village. His sense of urgency of the matter, has led him to call the attention of the authorities to the subject.

If ever a health officer for the port of Quebec was needed it was at this time when the plague was raging all over Europe.

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[16] Christy. History of Lower Canada, 1, 193.

Dr. Douglas[17] states:

> The matter was placed in the hands of Dr. Skey, the Inspector of Military Hospitals in Canada, to report on, or to suggest what action, if any, should be taken. Dr. Skey called a meeting of medical men, of magistrates, and of the principal citizens. He addressed them at length, saying that no danger was to be apprehended from the cholera which could not cross the Atlantic. I listened attentively to these remarks, and requesting to be heard, said that I thought it probable that the cholera would come to Quebec. Dr. Skey exclaimed, "Are you so foolish as to think that the cholera can cross the Atlantic?" I replied "I am foolish enough to think so." I then said that returning from India, cholera had broken out on the 10th day after leaving Sangor Island, that the last case had occurred on the 10th day after its first appearance on board and that ten days more would allow it to be transplanted in America. These remarks were like the bursting of a bomb shell on the meeting. Dr. Skey who was a thorough English gentleman of the old school, again addressed the meeting, saying that he thought it should be the duty of the government and of the civic authorities to meet the pestilence, in case it should cross the ocean, although he still thought it more than doubtful.

Dr. Douglas then mentions the curious fact that about the middle of April, 1832, and before the opening of navigation, he saw three cases of blue cholera: "I called my friends, Drs. Morrin and Rowley, to visit them."

The cholera did cross the Atlantic and not only wrought havoc in the Lower Province but passed through to the Upper Province. The director-general of the medical department, Sir James McGregor, issued orders to his officers early in the year and they were prepared for an outbreak of the disease.

The Canadians awaited with gloomy forebodings the arrival of the first ship of the year. Their feelings were still further depressed by an unhealthy spring, there being a great deal of rain. These gloomy forebodings were, alas, but too fully realized when on June 8th the ship "Carrick" arrived from Dublin with 132 passengers, fifty-nine of whom had died from cholera on the passage. Strange to say, on the 9th, before any of the passengers from the "Carrick" could have possibly reached Quebec, the plague had already broken out there, and on the 10th it appeared in Montreal, passing from there to Kingston, Toronto and other places in Upper Canada. To make matters worse there were about 30,000 Irish immigrants on their way to Canada. In many cases whole families of these immigrants were carried off. In the Upper and Lower Towns of Quebec there were scenes of an appalling description. During the summer over 3,200 persons died from the plague. This first visitation of the plague was the most terrible. By the 15th of June it had become general and in the space of one month over 4,000 people died in Quebec and Montreal.

The hospitals in Quebec could hold no more. Dr. R. von Iffland, who had charge of the hospital at the St. John's Suburbs, which consisted principally of canvas tents, mentions that for two weeks, day and night, he had no rest except for a few hours of sleep snatched at odd times, and when he tried to take off his boots the flesh adhered to the sole leather. Among the Quebec doctors who labored heroically at the various hospitals were Drs. Marsden, Lyons, Douglas, Morrison, Painchaud, Tessier, Andrews, Blanchet, Leslier, Perreault, Parent and O'Callaghan. Nurses were not available even when high wages were offered.

Trenches were dug in the Protestant burying ground in the St. John's Suburbs, used ever since the Conquest for the Protestants, and the dead were laid in these trenches.

Mr. Fletcher[18] remembers the cholera of 1832:

> It was the first appearance of the scourge, and the alarm was general. Several families, carried away by the prevailing panic, left town for the country. Quack medicines of all kinds

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[17] Douglas, J. *Op. cit.*

[18] Fletcher, E. T., *op. cit.*

were advertised. Benevolent societies were formed. Special services were held in the churches. The guns of the grand battery were discharged, and pitch-bay sent up their dense clouds all round the *enceinte* of the fortification. It was a terrible time of depression and anxiety. I shall never forget the sweltering heat of these summer nights, or the sickly moonlight that seemed to overlie, as an evil presence, the doomed and sickly city. The disease was thought to be contagious. I have seen Dr. Skey, Inspector of Hospitals, wash his hands carefully, after feeling the pulse of a cholera patient. Many carried a piece of camphor in the corner of a handkerchief as a prophylactic against possible infection.

From morn till even, the solemn procession of the dead, buried in almost precipitate haste, passed through the silent streets; and from the churches, there arose, from time to time, the sound of prayer, the wail of sorrow, the "*Miserere*" of passionate entreaty. In the beginning of August, confidence began to return. The plague had spent its force. It had lasted only two months; but in those two months nearly two thousand victims had perished. This was about one in every fifteen, Quebec at that time having a population of thirty thousand, or about the same as Montreal.

There was a second appearance of cholera in 1834, during the summer months, but the mortality was not so great. I had the disease myself in the month of July. After the preliminary cramps, etc., I lay for a few days in a trance-like condition, and then rallied.

Quebec was visited six times by the cholera, first in 1632 when there was neither drainage nor pure water in the city and lastly in 1854 when drainage and water were established. In an editorial in the *Medical Chronicle,*[19] the following remarks were made in view of the approach of the plague. After urging the appointment of a central Board of Health with power to appoint local boards throughout the province, the editors remark:

> It is no time when the disease is in our midst committing havoc in our families, to adopt measures to keep it out. The time of panic and confusion is not the time for well directed and effective action. A regular investigation of all the cities and towns, more particularly their suburbs, should be instituted under the direction of this Board. At this season of the year masses of animal and vegetable matter in a congealed state, admitting of easy removal, are to be seen in the yards. If left to the summer the putrefactive process sets in.

In 1854 cholera again broke out among the troops stationed at Quebec, Montreal, Kingston, Isle aux Noix and St. Helen's Island. In the latter place the 66th Regiment was encamped and there were as many as nine deaths and more than 100 cases of diarrhea. The outbreak at St. Helen's Island was traced to the men eating freely of the wild cherries found on the island. The officer in command, as soon as he discovered the men eating these cherries, ordered that they be gathered and destroyed.

Many of those who died during this year were buried in the old civil cemetery in Papineau Road.

It was during this epidemic in England that Sir James Paget, who was then serving in the London Hospital as an apprentice, saw cases treated, some by calomel and opium, some by saline injections into the veins. He tells us:

> The surprising and misleading revival of a woman, who while the saline injection was going on, was roused from an apparently impending death in the cold blue collapse, and sat up and talked, and for an hour or two seemed quite revived.

Hall stated:

> The population of Montreal was then (in 1832) 30,000. The cholera carried off in less than three months 3,000 of the inhabitants; during that memorable period both students and physicians worked hard night and day. During the day in conjunction with a fellow student of the name of Logie, the first graduate of the University in 1833, I had charge of and attended the cholera sheds, two long wooden buildings at Point St. Charles, while we alternately slept every week at Dr. Robertson's house to do his night work, as he was so hard wrought with professional

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[19] Vol. 1, 1854.

> duty during the day that he was glad to seek and obtain as much repose at night as possible. I never can forget the still quietude of the town when called out during the night to visit for the doctor some new and unfortunate case. Nothing broke the calm serenity of the summer night while walking or riding through the streets except the occasional clatter of the feet of some man running for professional aid or the pitiful cry of another labouring under the disease and calling for assistance.

On the 17th of June, 1834, the epidemic reached Kingston. Dr. Henry, then stationed with his regiment at Kingston, gives us a vivid picture of how the regular troops were protected as much as possible from the dreaded scourge. Colonel Nicol, who was commander at Kingston, had the barracks and hospitals cleaned and whitewashed; the barracks were isolated and all the married soldiers were removed with their families to a camp on the opposite side of the bay. The first case in the town appeared on the 17th of June, but it was not until the 4th of July that it appeared in the regiment. On that date two grenadiers were attacked.

> I was sent for on the instant, bled them both largely, and they recovered. Ten other men of the regiment were taken ill, and treated in the same way. The agonizing cramps yielded to the early and copious bleeding, as to a charm, and they also all recovered. Encouraged by the result of these and several instances amongst the poor people of the town, I began vainly to imagine that this plan of treatment would be generally successful, and wrote confidently to this effect to Dr. Skey. But I was soon to be undeceived; three men and a woman of the 66th were attacked the same night. I saw them immediately; and the symptoms being the same to all appearance, they were bled like the others, and all died within twelve hours of the first attack. We all heard wonderful accounts of the effects of transfusion of saline fluid into the veins, and Dr. Sampson, the principal practitioner in Kingston, and a man of talent, was determined, as well as myself, to give it a fair trial. We used it in twenty bad cases but unsuccessfully in all—though the first effect in every instance was the apparent restoration of the powers of life . . .
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> The appearance of Kingston during the epidemic was most melancholy: no business was done, for the country people kept aloof from the infected town. The yellow flag was hoisted near the market place on the beach and intercourse with the steamboats put under quarantine regulations. The conduct of the inhabitants was admirable, and reflected great credit on this little town. The medical men and the clergy of all persuasions vied with each other in the fearless discharge of their respective dangerous duties. We had thirty-six cases of bad cholera besides a host of choleroid complaints, in the regiment. Of these we lost five men and two women . . . The disease ceased entirely and the usual intercourse was restored between the garrison and the town in the middle of October.

The cholera of 1834 proved to be more fatal than the first. Kingston, with a population of about five thousand, lost two hundred in 1832; in 1834 three hundred died. Dr. Henry remarks that the last epidemic was marked more by symptoms of debility and prostration and less by violent spasms. He again noticed a "ferruginous taste in the air." This epidemic might have been still worse but for the fact that it broke out somewhat late, the 26th of July. Owing to the strict and prompt measures taken as in the former epidemic to isolate the garrison, they had only eight adult cases out of 769 persons, losing one man and two children, a ratio of about twenty-fold less than among the civil population.

Dr. Henry mentions that there was a material difference at Kingston between the practice of 1832 and 1834. Laudanum, brandy and other stimulants were now administered much more sparingly than before, when probably they had been used too freely. Bleeding also was not so common, since the violent tetanic spasms which it had frequently relieved in the former epidemic were not so general. Calomel had been given then very largely; in 1834 acetate of lead was employed in some nearly hopeless cases with benefit.

> Dr. Sampson, a clever and most worthy man, to whom I am under great obligations for

professional assistance, found it highly useful in the last stages of the disease. The doctor's favorite remedy was castor oil, combined with a small quantity of laudanum, given in something hot. In some hundred cases on this and the former occasion I witnessed the most excellent effects from this remedy . . . By the middle of September the epidemic ceased, but half the inhabitants were in mourning.

During the epidemic of 1834 the south shore of Lake Ontario was not visited by it.

From the report of Dr. Douglas, medical superintendent of the government emigration depot at Grosse Isle, thirty miles below Quebec, it appears that 279 vessels arrived there in 1854. They left Europe with 52,991 passengers. Of these 512 died on the voyage, and 112 children were born. Of the deaths, 347 were infants, and of the remainder a large majority was composed of aged persons. 10,164 of the whole number embarked at Liverpool: the mortality of these was 225, or upwards of 2 per cent. The mortality in all other vessels was .007. The passengers who came direct from the German ports were remarkably healthy. In 133 vessels there was not a single death nor a case of sickness on arrival. There was no case of ship fever, typhus, in any vessel arriving in the St. Lawrence during the year and with the exception of three ships from Limerick, no case of cholera in any vessel that brought immigrants to Canada.

The epidemic of 1854 was severe in Montreal, many of the doctors falling victims to the disease while attending those afflicted.

Dr. Craik, who was at this time house surgeon to the Montreal General Hospital, had a great responsibility placed upon him. All the orderlies and assistants fled and left him with only the apothecary and a few volunteer helpers who came to his aid. The immigrants were taken from the ship to the hospital door and left there. The young doctor and his assistants carried them to their beds and in many cases later placed them in their coffins. As soon as the panic subsided he reorganized the staff which had been found wanting.

Owing to his precautions during the epidemic not a single volunteer helper who went to his aid contracted the disease. In 1856 he was appointed demonstrator of anatomy and from that time he advanced step by step with increasing honors. In 1861 Dr. Craik became professor of clinical surgery and in 1867 he relinquished surgery, serving as professor of chemistry until 1879. He was registrar from 1869 to 1877 and treasurer from 1875 to 1889.

In speaking of the days when he had commenced to practice, he once mentioned an amusing incident which had happened to him. He was then, as so many of the doctors were in those days, living on Craig Street. Late one night there came a great knocking at the door, and when he asked from the window what was the matter, a voice called up: "Doctor, you're wanted in a great hurry," mentioning a distant part of the city.

Hastily dressing, the doctor made his way to a cab stand. He found one solitary cab with the driver fast asleep inside. Not delaying to waken him, the doctor sprang to the box and whipping up the horse tore away at a great speed for the house of his patient.

After some time the doctor came out to find the cabby still fast asleep inside the cab. Laughingly Dr. Craik concluded: "I drove the cab back to the stand and left the driver still sleeping inside his cab. The next day as I went to pay the man I told him what I had done and you never saw such a surprised man."

The cholera was brought into Canada in 1832, 1834 and 1854 by way of the St. Lawrence route, but in 1849, 1851–2 it came from the United States. Several pamphlets were written at this time on the cholera. Dr. Marsden of Quebec wrote one called "An Essay on the Contagion, Infection, Portability and Communication of the Asiatic Cholera in its relation to Quarantine, with a History of its Origin and Causes in Canada in 1832." Dr. Holmes wrote the history of the cholera in Montreal. He also submitted to the editor of the *Medical Chronicle* in 1866 a plan for quarantine in time of cholera.

The Ladies Benevolent Society was founded in the year 1832 for the purpose of assisting widows and orphans left destitute by the severe epidemic of cholera in that year.

A memorandum on cholera was adopted at a medical conference held at Ottawa in March, 1866, by the minister of agriculture. The conference was composed of the following members: Dr. Macdonnell, chairman; Dr. Van Cortland; Dr. Hill; Dr. Landry; Dr. Dickson; Dr. Aikins; Dr. Beaubien; Dr. Grant and Mr. Taché, reporter.

It was entitled "Memorandum on Cholera. Adopted at a Medical Conference Held in the Bureau of Agriculture, in March, 1866. Printed by Authority. Printed for the Bureau of Agriculture and Statistics, 1866."

The following remarks on the former epidemic of cholera in Canada occur in this memorandum.[20]

The first epidemic of cholera visited Canada in 1832. Its existence and its ravaging influences in many parts of Europe had at last excited fears to be entertained about the probability of its coming to our shores; and in October, 1831, a communication from the imperial authorities was made public by the executive of Lower Canada. Whereupon a meeting of the medical profession took place at Quebec, immediately after which Dr. Tessier of Quebec was despatched to New York, to study the sanitary measures adopted in that large community against the threatened scourge.

The first commission of a sanitary nature against the introduction and spread of cholera was established at Quebec in February, 1832, and was composed of Drs. Morrin, Parent and Pereault. Subsequently a rather large Board of Health was organized, and regulations passed for the inspection and registration of ships coming from infected ports. The cholera, having appeared in New York, Boston and other places in the United States, notwithstanding that it has been reported as the contrary, by some writers, made its first appearance in Canada at Quebec, where it was introduced by the shipping, on the 8th of June, and spread at once its destructive influence in the neighbouring parishes.

It was in Montreal on the 10th of June. Thence it extended its ravages to mostly all the localities of Upper and Lower Canada and disappeared entirely at the end of the month of October, having lasted in all about four months.

The second cholera followed the first within a very short time, and took place in 1834. At its first appearance, in the latter part of May, in the quarantine station at Grosse Isle, it affected so mild a character that it was not considered to be confirmed Asiatic cholera, and it preserved its mild form for a short period. It assumed, however, a more violent character at the end of July and during the month of August, but finally disappeared with the month of September, the Sanitary Commission having had a high mass of thanksgiving chanted in the Cathedral of Quebec on the second of October. The above fact is most important, as furnishing conclusive evidence of the cessation of the malady at a fixed date. The second sojourn of the pestilence in Canada having also lasted about four months.

The third cholera, which is for us the cholera of 1849 while for some countries it is the scourge of 1847 and for others 1849—seems to have entered Canada by Kingston, where it made its appearance at the end of May, 1849. The pestilence had previously to that date appeared in several parts of the United States, and was at that time rapidly ascending the Mississippi and the Missouri rivers.

Some slight cases occurred in Quebec on the 11th of July, and a few more on the 12th, when it spread through almost the whole of Canada, its ravages being in some places greater, but in many places less, and also generally less destructive than in 1832. It seems to have disappeared entirely about the middle of October, after a few days of recurrence in Montreal, having lasted in all this time about four months and a half.

The fourth epidemic of cholera in Canada took place in 1851. It was introduced through the States, and Quebec was the last of our cities to receive it. The appearance of the plague took place under a rather mild form in August;

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[20] Pape 9.

and the last cases were observed no later than the first days of October. It lasted only about two months taking Canada as a whole, and only five weeks at Quebec, from the 25th of August to the 2nd of October, having caused 206 deaths in that city.

On one of the last days it existed in Quebec, a ship, the Perthshire, sailed for England. Almost immediately after her departure from Quebec the pilot was seized with cholera and died. The captain and one sailor having also been attacked, the mate anchored the ship at l'Île Verte; but in a few days both patients got well and the vessel started again without any further case and completed her voyage.

The fifth epidemic took place in 1854. It first entered Canada at Quebec on the 20th of June, and for this attack we have the whole history of the importation of the malady in a report of Drs. Landry and Jackson and Mr. Gauthier, commissioners appointed to investigate the facts connected with the introduction of the cholera of 1854 into Canada.

Two emigrant ships both from Liverpool—the Glenmanna and the John Howell—having each a medical attendant, arrived at Grosse Isle before the middle of June. The Glenmanna had cholera on board and had lost a number of passengers at sea, the John Howell had no cholera, but had lost five passengers at sea from measles. They both disembarked their sick at the quarantine, and two or three days after proceeded to Quebec with the rest of their passengers. The two ships were inspected on the same day, the 17th of June, in the port of Quebec and found free from all sickness; two infants, however, having died of debility on board the John Howell between the quarantine and Quebec. The two ships apparently remained exempt from all sickness for two days, and were admitted to pratique on the 19th. The immigrants went ashore, some of them returning to the ships for meals and to sleep, when, on the 20th, the cholera broke out almost simultaneously in both ships, whence several cases were immediately sent to the Marine Hospital. Then it appeared on board some other ships and subsequently spread.

From Quebec and apparently following the course of the immigrants in their journey west, the cholera seems to have appeared in the undermentioned cities at these respective dates: at Montreal on the 22nd of June among immigrants first.

At Kingston on the 25th in the person of a resident, having had no other communication with the immigrants than looking at them at the wharf, but being a man of intemperate habits and in miserable circumstances.

At Toronto on the 25th in two residents, who were not known to have had communication with the immigrants.

In Hamilton on the 23rd and 24th of June in immigrants.

The cholera of 1854 ended in the latter part of the month of September, having lasted about three months. The Central Board of Health closed its labours on the 22nd of September by formal resolutions.

The report from which this information is gathered speaks of the immunity from cholera enjoyed by the town of Brackville, on the St. Lawrence, although situated on the same grand route as the ravaged cities, towns and villages bordering the river side, and although immigrants had been allowed to go ashore in passing by.

A fact of some importance is also recorded in the same report, which it is well to insert:

The cholera appeared in the Provincial Penitentiary at Kingston on the 21st of July—that is, nearly a month after it had commenced its ravages among the inhabitants of the surrounding neighborhood.

The number of deaths from cholera throughout the whole of Canada during this last epidemic, as recorded in the minute book of the Central Board of Health of 1854, is put down at 3,486; a figure which from the enormous difficulties to be met with in collecting correct statistical information, must of necessity fall a good deal short of the reality.

The difficulties—insurmountable when the small localities have to be accounted for—have rendered impossible any attempt at gathering in this memorandum figurative statistics of the former cholera epidemics, besides the figures above given.

These figures may convey a deductive idea of the cases inflicted by cholera on our country, when it is known that the number recorded is necessarily below the mark, and that the epidemic of 1854 was about one of the mildest of the five.

Immediately after the suppression of the Rebellion, the McGill Medical School, which had been closed for three years, reopened with an increase in the number of students.

Great activity was general throughout the profession in the city. Medical societies were formed, new medical schools were started and dispensaries opened. We hear of Drs. W. Wright and G. W. Campbell in Montreal giving lectures on physiology at the Mercantile Library before large audiences.

The question of medical tariffs was settled at a special meeting of the medical board held on February 11, 1839 and the following rates adopted: for visits to the country five shillings per mile from the market-house, in addition to the fee for opinion; midwifery attendance in the country five shillings per mile, for nine days in addition, vaccination five shillings in addition to the regular fee; cupping five pence in addition to the regular fee. All professional debts were to be paid quarterly.

About this time, in the year 1843, the name of Dr. Francis Badgley takes a prominent place in this general revival among medical men. It was largely due to his efforts that the medical profession in Montreal, after seventeen years, followed the example of their confrères at Quebec and formed themselves into a society. This society was called the Montreal Medico-Chirurgical Society. While it lasted the members held meetings monthly during the summer until November, after which they were held fortnightly. All country practitioners were earnestly invited to attend these meetings and take part in them, which they did. In 1846 the society made a change in its system of management; a new code of rules was introduced and at a meeting held on August 2nd of that year the following officers were elected: president; Dr. Holmes; vice-president, Dr. Crawford, secretary, Dr. Badgley; treasurer, Dr. Fraser; committee of management, Dr. Arnoldi, Jr., Dr. Hall and Dr. Sutherland. The members in 1847–48 held their meetings at the Mechanics' Institute.

Later, the country practitioners formed medical societies of their own and sent the discussions which took place at these meetings for publication in the *British-American Journal of Medical and Physical Science*. One of the first of these societies to be formed was that called the Frontier Medical Society at a meeting held at Clarenceville, September 28, 1847, at which the following doctors were present: Drs. May, Verity, Stuart, Livingston, DeLisle, Dykeman, and Lord. There were in all about twelve members.

The Toronto Medico-Chirurgical Society continued to flourish long after that of Montreal, which on account of dissention and party politics had dissolved.

In 1849 the following societies were in existence: Toronto Medico-Chirurgical, Montreal Medico-Chirurgical, Quebec Medico-Chirurgical, Niagara Medical Society, Frontier Medical Society, Eastern Townships Medical Society, and several others.

So far the only medical school in Canada was that of the McGill Medical Faculty. But in 1843 a medical faculty was added to King's College at York, and in the same year the Montreal School of Medicine and Surgery was started. Dr. Badgley seems to have been the chief worker in the formation of the latter school.

The establishment of this school met with great opposition from the McGill Medical Faculty. They claimed that if independent schools were established and granted full licensing powers, the standard of medical education would suffer. But in spite of all opposition the new school was launched in 1843. The first course of lectures was delivered in the winter of 1844. This new school had a strong following and an efficient body of teachers, including Dr. Sutherland, Dr. F. Badgley, Dr. Thomas Arnoldi, Dr. Munroe and Dr. Bebaud. The plan of lectures they adopted was to deliver two full courses during the session, each course to consist of eighty lectures in English and French. The new school commenced with forty-two students, and so successful were they that they had to remove to more commodious quarters on St. Urbain Street, occupying the upper part of a large building which had formerly been used by the Mechanics' Institute. A library was started and they were successful in collecting over six thousand volumes. One of the many gifts given to them was a folio edition of the works of Albinus.

Dr. Hall writes:

> Shortly after the incorporation of the "Montreal School of Medicine and Surgery" that body saw fit to present their students, for the sum of fifteen dollars, with a parchment document, which they were pleased to term "a diploma." This procedure, if not in direct contravention to the requirements of the act of incorporation, was certainly not provided for in the bill as it eventually passed both Houses of the Legislature. The power, however, to grant diplomas, was sought by the framers of the original bill; and had not the Legislative Council arrested it in its passage, and modified a clause, which very modestly assumed the right of the corporation to issue "Diplomas, Certificates, or Testimonials," they would have had, even from the commencement a legal right to do so. During the present session of Parliament, they have made another effort to obtain this privilege.

Dr. Sutherland, who lectured on chemistry and materia medica, in his introductory lecture at the second session of this school, urged the great necessity of the study of medical chemistry by the medical student.

In Dr. Sutherland's speech he made the following remarks, showing the spirit of opposition to the McGill Medical School.

> What exclusive right is possessed by this Faculty? What species of idolatry is it which has the right to enforce us to blindly worship the memory of its departed founders, in permitting their representatives to hold within an iron grasp all the reputation desirable from such a source. What has rendered this place a shrine at which they alone are to receive homage.

The authorities of the Montreal school made every effort to become recognized by the government. They applied by Act of Parliament for permission to grant diplomas. This was denied them, but they were granted permission to give certificates. The bill to incorporate the College of Medicine and Surgery had been passed by the Lower House in 1845 by a large majority, but permission to grant diplomas was again refused. The authorities of this college did grant diplomas, however, in spite of the opposition from the McGill Medical Faculty, who pointed out that the diplomas were invalid.

It is not surprising to find that Dr. Francis Badgley, who had taken an active part in establishing this school, and in forming medical societies, saw the great need of a medical journal. Accordingly in 1844 we have the first English medical journal published. This journal was called the *Montreal Medical Gazette* and Dr. Francis Badgley and Dr. Wm. Sutherland were the editors. It appeared on April 1, 1844, but from the opening remarks of the editors, it would seem that this was not the first number published, for the editors speak of the "number issued last month, which was but a feeler." The first number seems to have been published in both languages. The editors, no doubt, thought that thus they would secure the cooperation of the French profession. This, however, was not found to be necessary, so the journal was published only in English, although as the editors stated: "Pages will be open to communications in the French language."

The journal was published monthly by the well-known firm of John Lovell, who had his printing press in the rear of the People's Bank. The subscription was fifteen shillings per annum.

Seventeen years had elapsed before the second attempt at Canadian medical journalism took place. Though the *Montreal Medical Gazette* had but a brief existence, from April 1, 1844 to May 1, 1845, it had already received flattering notices in the leading American journals. Throughout the various numbers the well-known names of Drs. Crawford, Arnoldi, Scott and others appeared. Dr. Crawford had several articles on the use of iodine in smallpox, as well as a series of articles on medical topography. Quite a number of cases of smallpox were treated by iodine, applied externally. Some years later another doctor claimed that he had been the first to use this remedy; Dr. Hall, who was then editor of the *British-American Journal,* denied this, affirming the fact that it was Dr. Crawford.

A statement had been copied from the *London and Edinburgh Medical Journal* in the *Montreal Medical Gazette,* to the effect that: "Goitre had, in consequence of the clearing of the woods, entirely disappeared from certain parts of North America, where it had previously greatly prevailed." Dr. Crawford took exception to this, saying that "there were still many numerous and aggravated cases of the malady and that many of the cases originated in immigrants from the old world." He then reported a rare case of congenital goitre.[21]

To Dr. Badgley's zeal and enterprise is due the publishing of the various reports of the medical institutions, not only in Montreal but throughout Canada. He got the students attending the hospitals to send in a series of clinical reports by offering a prize of some standard medical work and a copy of the journal. So we find some of the students attending the Marine Hospital at Quebec contributing clinical reports.

From the pages of this journal we learn that in October, 1844, an epidemic of whooping-cough swept over the city. The domestic remedy strongly recommended was the syrup of the garden turnip, cut into slices and covered with maple sugar.

Although Dr. Badgley called the journal an independent paper both editors were teachers of the new school which could not but bias the tone of the editorial articles. And as a matter of fact some of the editorials in this journal were such as to call down upon the editors fierce and lengthy disputes from the McGill authorities. For instance, Dr. Badgley bitterly complained that the medical board was at present chiefly composed of the professors and all the lecturers of the McGill Medical Faculty, and that as they already taught the candidates who presented themselves it was a mere form. He thought the district medical board should consist of disinterested members, unconnected with public medical schools. The staff of the new school petitioned His Excellency the Governor General that the lecturers of the school should also be nominated members of the Montreal Branch of the Provincial Medical Board.

Dr. Hall, who was always keenly interested in any question touching the rights of the McGill Medical Faculty, at once took exception to this alarming new heresy, for the Medical Faculty were jealous of their reputation and anxious that their College should continue to stand in the foremost place.

These stormy controversies hastened the advent of a second journal which was to be the mouthpiece of the McGill faculty. This second venture took place about a year later, and was called *The British-American Medical and Physical Journal.* The editors were Dr. Hall and Dr. Macdonnell, men eminently fitted for the position. The title page reads: "The *British-American Journal of Medicine and Physical Science,* Edited by A. Hall, Lecturer on Chemistry, and R. L. Macdonnell, Lecturer on Institutes of Medicine, University of McGill College. Volume 1," etc.

A new series commenced with Volume VI, 1850, as the editors said, to furnish a greater amount of reading matter, and was published by Messrs. W. Salter & Co. Dr. Macdonnell had been for many years the editor of the *Dublin Journal of Medical Science* and Dr. Hall's literary talents peculiarly fitted him for the position. He was a man of good judgment and culture and utterly fearless in saying what he thought was right. He labored incessantly to place the Medical Faculty beyond the frequent attacks it suffered from its rivals. He certainly had every opportunity to exercise his talents, as the times were stormy enough.

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[21] Crawford, J. *Montreal Med. Gaz.,* 1, 374.

The first number of this new journal was circulated in the city on Saturday the 19th of May, 1845. With the publication of this journal the *Montreal Medical Gazette* ceased publication. Dr. Badgley's last editorial concludes with these words:

> Had a journal been originated in Toronto, or in Quebec, at any period since ours saw the light, we would willingly have withdrawn it (and this we have repeatedly stated) for it was not ambition that caused us to undertake the editorial chair—it was a desire to have a medical journal in Canada . . . To the Editor of the *British-American Journal of Medicine*, we offer our best wishes for success, and however opposed his opinions may have been to ours in some matters, he shall not have reason to complain of our attempting to thwart his in firmly establishing a periodical of medical literature in Montreal.

Editors of the new journal followed the example of the editors of the *Montreal Medical Gazette* in trying to obtain reports from all the public charities and in strenuously applying a high standard for medical education. This journal did much to better the condition of medicine by its unsparing denunciations of unprofessional conduct.

With the publication of the second volume, Dr. Macdonnell retired from the editorship, although he continued to write for the journal. In the fourth and fifth volumes we find Dr. Badgley as one of the contributors, having several papers on the Irish emigrant fever and other topics; in volume five there is also a letter from him concerning the great necessity of forming a provincial medical association. He had, when he was secretary for the Montreal Medico-Chirurgical Society, tried to bring this about, through the Toronto and Quebec medical societies, but it was not until October 9, 1867, that the project was successfully carried out. At a meeting held in Quebec, in Laval University, the Provincial Medical Association was formed. The first meeting was held in Montreal in 1868 with Dr. Tupper as president.

Although Dr. Hall had given his services to the journal gratis like most editors of the Canadian medical journals, by the end of five years it had fallen deeply in debt, partly through non-payment of the subscriptions. Dr. Badgley urged that with the formation of a medical association for the province, based upon that of the Provincial Medical and Surgical Association of England, which for the small annual subscription of one sovereign furnished to each of its members a copy of the *Provincial Medical and Surgical Journal*, this difficulty could be overcome. The first meeting to consider Dr. Badgley's scheme was held in Three Rivers in 1850. If it had been carried out at the time there is hardly any doubt that Dr. Hall would have continued to edit the journal.

Another journal was started in 1852 by Dr. Macdonnell and Dr. David, called *The Canada Medical Journal and Monthly Record of Medical and Surgical Science*. It ran for a year, and was followed in 1865 by a journal of the same name, edited by Dr. Fenwick and Dr. Campbell. Eight volumes of this journal were published. The next journal was *The Canada Medical and Surgical Journal*, edited by Dr. Fenwick. Sixteen volumes of this journal were published from 1872 to 1888, when its name was finally changed, in 1888, to *The Montreal Medical Journal*, edited by Drs. Ross, Roddick, and Stewart. This in turn was transformed into *The Canadian Medical Association Journal* in 1910, and with it was incorporated *The Maritime Medical News*.[22]

Dr. Macdonnell was then surgeon to the St. Patrick's Hospital and lecturer on surgery at the St. Lawrence School of Medicine. Dr. David was physician to St. Patrick's Hospital and lecturer on the practice of physic at the St. Lawrence School of Medicine. This journal was evidently started at the same time as the St. Lawrence School of Medicine.

[22] *Canad. M. Ass. J.*, New Ser., II, i.

Dr. Badgley was a highly educated man and did more to elevate the tone of medical education in Canada than is generally known. Although he was at one time opposed to the Medical Faculty of McGill College he was later to occupy the chair of medical jurisprudence in this college. He held this chair from 1849 until 1850, when he resigned his position to go to Toronto. After reading some of Dr. Hall's stirring editorials against him and the School of Medicine and Surgery it is pleasant to read the following testimonial to Dr. Badgley[23] prior to Dr. Badgley's departure for Toronto:

> It gives us pleasure to be enabled to record the following proceedings, on account of the worthiness of the recipient of the honour. There are few who, in so short a time have done more for the benefit of their profession than Dr. Badgley—in this country at least. In stating this, we are constrained to say, that this journal proved itself an active opponent to several of his projects, and succeeded in modifying his measures, so that they might obtain the general approbation of the profession. But, acting on the principle of "*palmam qui meruit ferat,*" it is to him that the College of Physicians and Surgeons of Lower Canada owes its origin, although modified as it at present is. It is mainly to his exertions with the assistance of Dr. Arnoldi, that the Montreal School of Medicine has to attribute its possession of a local habitation and a name. He was solely instrumental in establishing the Medico-Chirurgical Society of this city, and has more lately succeeded in establishing the British American Medical and Surgical Association, of which this Journal is now the organ. We have differed—and conscientiously too—with Dr. B. on many points of medical politics; we have wielded the pen against one another on more occasions than one; *we* have as yet succeeded in every point to which we have directed our efforts, and Dr. B. has gained his object, while all are pleased at the proud position which the Profession now holds. The Editorials of this Journal will speak for themselves on this subject. In taking leave of Dr. Badgley, we can only assure him, thus openly, of our sincere esteem for his character, and we hope that he may reap in Toronto that reward to which his talents deservedly entitle him.

Another testimonial took the form of a silver salver which bore the following inscription:

> PRESENTED TO
>
> FRANCIS BADGLEY, M.D.
>
> By his professional brethren of Montreal, on the occasion of his departure from among them, as a token of their appreciation of his abilities, and of esteem for his private virtues; also, as an acknowledgment of his indefatigable and successful exertions to advance the interests of the Medical Profession in this Province.
>
> Montreal, July 24, 1850.
>
> *Reply*
>
> MY DEAR FRIENDS,—This unexpected kindness of yours has completely unmanned me. My total ignorance of your intention even to wait upon me until within a couple of hours, and that you should have considered it requisite to assure me of your good will by so splendid a gift, deprive me entirely of all self-possession.
>
> I can only thank you all for these evidences of your friendly feeling towards me, and beg you to rest assured, that wherever my lot may be cast, I shall ever remember with pride, this convincing refutation of the old proverb, "that two of a trade can never agree."
>
> FRANCIS BADGLEY.

Dr. Racey graduated from the Montreal Medical Institution and then continued his studies in Edinburgh. He was appointed, in 1833, to Dr. Caldwell's position as lecturer on the principles and practice of medicine, and was associate lecturer on midwifery and on the institutes of medicine and surgery. Dr. Racey resigned his position in 1836 to return to Quebec, his native town.

Dr. William Sutherland graduated from the McGill Medical Faculty in 1836. Instead of practicing he entered business in Upper Canada, but this he soon relinquished and returned to Montreal where he commenced to practice. For some years he struggled along on a very small income, but he soon became known and sought after and his practice became one of the largest in the city.

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[23] *Brit.-Amer. M. & Phys. J.*, 1850, VI, 177.

He lectured on chemistry in the School of Medicine and Surgery from 1843 to 1849, when he resigned his position to accept the chair of chemistry in the McGill Medical Faculty, which he held until 1867. He delivered his lectures in a room in the Mechanics' Institute on St. James Street, while waiting for the completion of the Cote Street building, which he with Dr. Campbell and Dr. MacCulloch were building at their own expense. Dr. Sutherland was the first of those who were graduated from the McGill Medical Faculty to become one of its professors.

Dr. Joseph Workman[24] writes of Dr. Sutherland:

> I now come to William Sutherland, but here words fail me, and words could not express all that I wish to convey of my admiration and esteem of this early friend. Of William Sutherland I know not what to say, because I knew him so well, and to know him well, was to love him dearly. He was the very soul of candour, his friendship was as fine as it was warm, his love of truth and of true manhood was as strong as was his detestation of duplicity and meanness. He was no changling, and I believe all the friends of his youth continued such to the end of his brief life. Of his service in this school many on your roll of graduates have borne grateful testimony, and I am sure his loss will long be deplored by your staff.

Dr. MacCallum says:[25]

> Possessed of a striking physique, and of a fine toned resonant voice, these in conjunction with a remarkable command of language, and a fluent and impressive delivery, made him easily the finest and most admired lecturer in the Faculty. It was a pleasure to listen to him in the class-room as he presented the dry details of chemistry with an attractiveness that commanded the unflagging attention and admiration of his hearers. Not only did he excel as a speaker, he was as well an elegant and forcible writer and a formidable controversialist.

Dr. William Wright was born in Quebec, July 2, 1827. His father, William Wright, was in the Adjutant-General's Department of that city. In 1839 the family removed to Montreal and Dr. Wright was indentured in 1843 to Dr. James Crawford for five years. He graduated in 1848 from McGill College with high honors, winning throughout his course all the prizes. He went abroad that year and in 1849 graduated as L.R.C.S., Edinburgh. From 1850–52 he was demonstrator of anatomy; 1852–54 professor of medical jurisprudence and from 1854–1883 professor of materia medica and therapeutics. In 1883 Dr. Wright resigned his position in the college. He was an able and prolific writer and was joint editor of the *Medical Chronicle*.

When Dr. Sewell, in 1852, returned to Quebec, Dr. Wright was elected to his place in the Montreal General Hospital. He was one of the founders of the Medical Students' Club, which was revived in 1856 under the name of the University Medical Students' Association. He held many important positions. He was ordained to the diaconate in 1865 by Bishop Fulford and as a clergyman in 1871 by Bishop Oxenden.

Dr. Stephen C. Sewell was appointed in 1842 to two chairs in the Faculty, those of physiology and pharmacy. These two chairs he occupied until 1850 when he succeeded Dr. Robert Macdonnell to the chair of clinical medicine.

Dr. MacCulloch was born in Scotland, attended the University of Glasgow when he commenced to study medicine. Afterwards he went to London and became a student at Brooks' and obtained the Diploma of the Royal College of Surgeons of England.

Mr. Bransby Cooper gave him letters of introduction to the Bishop of Quebec and on his arrival in this country he commenced to practice in Ste. Thérèse. He resided here until 1833 when he came to Montreal, practicing there twenty-one years, until 1854. He was a good practitioner and had the honorary degree of doctor of medicine conferred upon him by McGill University, and at the time of his death was professor of midwifery and diseases of women and children and physician to the University Lying-in Hospital and at one time to the Montreal General Hospital. He was particularly fond of the study of zoology and was interested in the Natural History Society of Montreal. In 1841 he became the Member for Terrebonne.

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[24] Workman, J. Past, Present and Future. Introductory lecture to the fifty-first session, 1883, of McGill Medical Faculty, *Canad. M. & S. J.*, Montreal, 1883–4, XII.

[25] MacCallum, D.C. Reminiscences of the Medical School of McGill University. Reprinted from *McGill Univ. Magazine*, Montreal.

In 1843, the McGill Medical Faculty, chiefly through the exertions of Dr. Holmes, founded the University Lying-in Hospital, as its students had been refused admittance to Dr. MacNider's hospital established by him some time in 1841 or 1842. Dr. MacNider was a lecturer on midwifery in the Montreal School of Medicine and died in 1846, when his hospital was discontinued. The University Lying-in Hospital has had an unbroken existence from its foundation until the present time. It was for the first year supported and conducted by members of the Medical Faculty, and all students who had attended one course in midwifery were admitted to its clinics. In 1844, a change was made in the administration of its affairs by admitting lady patrons, visitors and collectors, who have ever since taken an active share in the management of the institution. The hospital was now supported by subscription and by an annual legislative grant, about £75 per annum. As has already been noted, another source of income was the sale of fresh vaccine. Mrs. Buchanan, who seems to have been held in high esteem by the committee of management, was the first matron of the hospital. In 1851 she resigned and was succeeded by Mrs. Smith who had received her diploma as a midwife in Edinburgh.

Dr. M. MacCulloch had charge of this hospital for ten years. He came to Montreal in 1835 from St. Eustache where he had been practicing and opened a drug store on Notre Dame Street. Here he later commenced to practice and in 1842 was appointed to the chair of midwifery at McGill, where he received the degree of doctor of medicine. He died in 1854 from cholera.

There was at this time another lying-in hospital, at the Hôpital de St. Pelagie, under the charge of Dr. Trudelle, lecturer on midwifery in the Montreal School of Medicine.

After Dr. MacCulloch's death in 1854 the University Lying-in Hospital was under the charge of Dr. Hall with the other members of the Faculty on the board. In 1860 Mrs. Hope became matron and at this time the management by their carefulness succeeded in having to their credit £500, which was reserved as a fund for a new building. At this time also a careful record was kept of every case and reports of 1,009 accouchements were published.[26] In 1860 Dr. Hall also published several interesting papers on the statistics from this hospital[27] and Dr. MacCulloch[28] reported details of 747 cases under his care in the hospital.

In 1854 an act to incorporate the University Lying-in Hospital was passed. It read:

> WHEREAS an association hath existed for several years in the City of Montreal, in the Province, under the name of the University Lying-in Hospital, the object whereof is charitable and to afford the means of furthering the acquisition of obstetrical science, and supply scientific aid to destitute females at a critical period, and whereas the said Association is composed of the persons hereinafter named, and others, who have set forth in their petition that the Incorporation of the said Association would greatly increase and secure the advantage resulting therefrom, and have prayed that they and their successors may be incorporated in conformity with the regulations and provisions hereinafter mentioned: Be it therefore enacted by the Queen's Most Excellent Majesty, by and with the advice and consent of the Legislative Council and of the Legislative Assembly of the Province of Canada, constituted and assembled

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[26] *Med. Chron.*, Montreal, Sept., 1857.

[27] *Brit.-Amer. M. and Phys. J.*, 1860.

[28] *Op. cit.*, Feb., 1847.

by virtue of and under the authority of an Act passed in the parliament of the United Kingdom of Great Britain and Ireland, and instituted, An Act to reunite the Province of Upper and Lower Canada, and for the Government of Canada, and it is hereby enacted by the authority of the same as follows:

I. Margaret Lunn, Mary Fulford, Eleanor Ostell, Directresses; Augusta Durnford, Secretary of the said University Lying-in Hospital; Andrew F. Holmes, M.D., G. W. Campbell, M.D., C. Bruneau, M.D. and W. Sutherland, M.D., James Crawford, M.D., William E. Scott, M.D., William Wright, M.D., Robert Palmer Howard, M.D., and William Fraser, M.D., consulting physicians to the same. Archibald Hall, M.D. Physician in Attendance, and Benjamin Workman, M.D., Medical Registrar; also officers of the said Lying-in Hospital, and such other persons as now are or shall, under the provisions of this Act and the Bye-Laws of the said Association, be or become members thereof, shall be, and they are hereby constituted a corporation under the name of "The University Lying-in Hospital" and shall be entitled to acquire, hold, possess, take and receive for the purposes of the said corporation any real or immovable property and stock and securities of any description, not exceeding in yearly value the sum of one thousand pounds currency, and the same to sell, alienate, and dispose of, and acquire others in their stead, for the purposes above mentioned.

II. All and every the estates, real and personal, belonging to the said Association, and which the said Association, or the members thereof as such, may hereafter acquire, and all debts, claims and demands due to the said Association shall be, and they are hereby vested in the said Corporation hereby constituted, and the said Corporation shall be liable for all debts due by, or claims against the said Association.

III. The Bye-Laws, Rules and Regulations of the said Association in force at the time of the passing of this Act shall be and continue to be the Bye-Laws, Rules and Regulations of the said Corporation; and the officers of the said Association; at the time of the passing of this Act, and each of them shall continue to fulfil their respective duties as officers of the said Corporation, and to arrange and conduct the affairs thereof, until others shall be appointed in their stead, under the said Bye-Laws, Rules, and Orders.

IV. This Act shall be deemed a Public Act.

The first dispensary in the city was opened on October 1, 1843, by Drs. Arnoldi, Badgley, MacNider, Munro, Sutherland and Nelson. Their first quarters soon became too small for their growing needs and it was decided to move to St. Urbain Street to the lower part of the same building occupied by the Montreal School of Medicine, and formerly occupied by the Mechanics' Institute. From the first report, which was signed by Robert McGill, chairman, and Dr. William Wright, secretary, it seems that 274 persons were treated from October to June, 1844. An editorial on their first printed report states:[29] "The wonder is that a city like Montreal should have been so long without an institution of this kind . . . We recommend this charity to the favor and support of a benevolent public." The dispensary was able to meet all expenses during its first year by the subscriptions sent in. The governor-general became one of its patrons and contributed to its funds. After two years, however, it was obliged to close owing to lack of funds, but upon the outbreak of cholera in 1849 it was reopened under the charge of Drs. Wright, Gibb, Peltier, Boyd, Howard and Fenwick. An infirmary for children was also added.

From the 6th of May, 1850, to the 6th of August, 1850, 106 persons have availed themselves of the benefit of the Institution, of whom 20 have been attended at their own homes; 15 were sick subscribers, 23 from charitable subscribers, and 68 were recommended.

Of the gross number of cases there have been discharged: Cured, 59, relieved 19, incurable 1; dead 1; sent into hospital 5; who did not return 1, 20 are still under treatment.

On this number also there were,

Under two years of age	5
From 2 to 8 years of age	16
From 8 to 20 years of age	16
From 20 to 40 years of age	42
From 40 to 60 years of age	21
Over 60	6

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[29] *Montreal Gazette*, Aug., 1850.

Of these, 66 belonged to the Church of Rome; 30 to the Church of England; 2 to the Church of Scotland; and 8 were Wesleyans.

Of the whole number there was only one French Canadian.

The diseases treated have been:

Fevers	9
Diseases of the organs of digestion	27
Diseases of the organs of respiration	18
Diseases of the organs of circulation	4
Diseases of the nervous system	4
Diseases of the skin	5
Diseases of the ear	4
Diseases of the eye	8
Rheumatism and affections of joints	9
Female complaints	4
Surgical diseases	14

Such are the proofs which three months have afforded of the existent necessity there is for this institution; of the numbers standing in need of it; of the eagerness with which it is sought after, and of the encouragement to confirm and extend its usefulness.

ROBERT MCGILL, Chairman.
WM. WRIGHT, M.D., Secretary.

The Anatomy Bill was passed by the Legislature of 1843, yet as Professor Shepherd points out as no penalty was attached to the law it was never carried out. The students had to contend with great difficulties before they could secure material for their dissecting. All their drawings and models, made of wax, even if they showed sections of the different parts of the human body, were of little avail without the practical knowledge which they must have before they could legally begin practice. In these early days some of the students in Montreal hired an old wooden house on Craig Street, where considerable dissecting was done. Dr. Worthington mentions that in Quebec, where there were no medical schools, he and his fellow students did their dissecting at the top of that wonderful old house of Dr. Douglas.

In these early days the apothecaries' shops were noted for their well-kept and handsome appointments. In 1846 the Medical Hall was opened on Great St. James Street; this and that of Mr. James MacDonald, which afterwards passed into the hands of S. J. Lyman and Company, were the two finest stores. At the pharmacy of Dr. Pecaults, 69 St. Paul Street, Bonsecours Market, the medical profession and students were invited to inspect a set of ten models of "surgical anatomy of natural size, made in the most perfect imitation ever seen in this country."

Another important medical event took place about this time, namely, a new bill for regulating the study and practice of medicine. One of the items concerned raising the standard of education for those about to enter the practice of medicine. Another important item was the penalty clause, which would protect the licensed practitioner from the ignorant quacks who were beginning to be very numerous.

The prescribed curriculum was made as simple as possible to meet the difficulties of a new country where opportunities for education and pecuniary resources were limited. They required:

> That the candidate is at least, seventeen years of age; that he has received a liberal education, and that he possesses a complete knowledge of the classics, satisfactory proof of these to be afforded to the Medical Board at the time of commencing his studies which were to extend over a period of four years, at the end of which he was to furnish testimonials of attendance on the following branches of medical education, taught at a University, college or incorporated school of medicine, in attendance on which two out of the six years of study at the least are to be occupied.
>
> Anatomy and Physiology—two courses of each.
>
> Chemistry and Pharmacy—course to continue for six months.
>
> Materia Medica, Theory and Practice of Physics, Principles and Practice of Surgery, Midwifery and Diseases of Women and Children—The number of lectures in each course, 120, and each lecture of one hour's duration.
>
> Clinical Medicine and Surgery—Two courses,
> Practical Anatomy—Two courses,
> Hospital attendance—One year.

Chloroform was first used in Canada in place of ether in 1848. Both were used in the Montreal General Hospital by Drs. Holmes and Sutherland. Chloroform was manufactured in the city by S. J. Lyman and Company, but Drs. Hall and Sterry Hunt of Montreal were the first to make it in Canada. This was done as an experiment before their classes in chemistry, which were then given at Skakel's Royal Grammar School in Fortification Lane.

Dr. Douglas of Quebec manufactured chloroform in 1848, after several unsuccessful trials. It was used at the Marine Hospital in Quebec on the 20th of February, 1848, by Dr. Douglas, who mentioned in his "Reminiscences:"

> I was fortunate in never meeting with a case in which its use was followed by immediate fatal effects. But I became impressed with the conviction, that the employment during surgical operations was followed by deterioration of the system evinced by the appearance and condition of the wounds after operation. To solve the question I instituted a series of comparisons in surgical cases, which were as nearly similar to each other as possible. I placed repeatedly two patients after operation in the same ward and in the healing of the wounds or stumps, as well as in the general state and condition of the patients, I perceived a marked difference in favour of those who had not been subjected to the action of the chloroform.

Dr. E. D. Worthington of Sherbrooke used it with remarkable success and in speaking of it, said that he was satisfied "that a piece of sponge, one inch square, would be better than a handkerchief to inhale from" and he also advised the use of a "funnel-shaped instrument of some soft material capable of being adapted to all faces, with a small sponge at the apex."

A Pathological Society was formed in 1851 by Drs. H. Peltier, C. E. Fenwick, and G. W. Gibb.

In the same year Dr. Henry Howard published a book on the anatomy, pathology and physiology of the eye.

The new school now became a fruitful source of trouble to the McGill Medical Faculty. Its growing popularity, which continued to exist and flourish in spite of the stormy days of medical politics, caused the McGill Medical Faculty to move back again to the City, and the starting of the St. Lawrence School of Medicine. The faculty of the McGill Medical School had in 1845 petitioned the governors of the university that since their quarters on St. George's Street had become too small, they be allowed to move into the central part of the Arts Building. This move was a great mistake. In the first place it was too far from the city. In a delightful sketch by the late Dr. D. C. MacCallum,[30] he gives a realistic picture of the trials of the professors and students in endeavoring to reach the college in time for lectures on cold winter mornings. In those old peaceful days of leisure it seemed a strenuous thing to rush from the college back to the heart of the city. Now all this is changed. The city has encroached on the old college till it has been left only breathing room. All the semblance of an estate in which it stood is gone.

These several causes, together with a petition from the students that the lectures be given in town, caused the clever and able guardians of the Faculty to realize that there was nothing for them to do but to return to the city. But the governors thought otherwise, and did all they could to discourage the idea. The Faculty lost no time however in carrying out the removal, and Drs. Campbell, Sutherland, and MacCulloch gave the funds for a new building which was erected on Côté Street. Within six years the Faculty was back in the city at No. 15 Côté Street as tenants of the proprietors.

In 1851, shortly after the McGill Medical Faculty had made arrangements with the French Canadian School for the cessation of the English department a new medical school was started under the name of St. Lawrence School of Medicine of Montreal. This school was incorporated by act of

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[30] MacCallum, D. C. *op. cit.*

Provincial Parliament, and was founded by Dr. George Gibb.

Although this school had but a brief existence, it was a serious menace to the McGill Medical Faculty. The school was situated in a central place near the Montreal General Hospital and was more convenient for the students than the McGill Medical School. The latter was situated too far away from the students, most of whom lived on Craig Street and the side streets off it. Some even boarded in St. Paul Street, while most of the French lived in the eastern part of the city. The school had as many as seventeen students enrolled for the first session. A new hospital was also started by the teachers of this school, called the St. Patrick's Hospital. It was in existence for twelve years and was absorbed by the Hôtel Dieu in 1859, when its buildings were built on Pine Avenue. The growing popularity of this school was the means of inducing the Medical Faculty to return to the city. The St. Lawrence school then went out of existence.

One of the professors of the school, Dr. W. W. Jones, a teacher of anatomy, raised a troop of cavalry called the Queen's Light Dragoons. This regiment was in active service on the Frontier for about twelve years. It was finally abandoned in 1850 after the pelting of Lord Elgin. Dr. Jones afterward returned to practice.

Dr. George Gibb was born in Montreal in 1821. He lectured on the institutes of medicine and comparative anatomy in the St. Lawrence School. He was curator and librarian of the Natural Historical Society for four years, in which time he made a systematic arrangement of the collection, adding the greater part of his private museum, numbering 1500 specimens in natural history. He also presented other subjects of interest and curiosity to the museum. While in England, he corresponded for the *Medical Chronicle* and became the attending physician to the St. Pancreas Royal General Dispensary.

In the reorganization of the McGill Medical school in 1852–53, Dr. Holmes became dean and the school moved into its fifth home on Côté Street. Côté Street in those days was a quiet, retired street in the center of the city within easy reach of the Montreal General and the University Lying-in Hospitals. Here the Faculty remained for about twenty years. This new home was the largest and best equipped building they had as yet occupied, was fitted with all the latest improvements, hot water, gas, etc., and was well ventilated.

Many changes in the curriculum took place during the years the Faculty was on Côté Street and many new names appear on the teaching staff. The term was lengthened from sixteen to eighteen and twenty weeks, and the course made three years instead of two, and later four. In 1853–4 the curriculum was altered and those students coming from other schools were required to show attendance for three sessions or that they had followed two courses of every branch required by the curriculum of McGill College: those wishing to graduate at McGill must attend one session at McGill and four of its classes.

About the year 1852 the Faculty began to grant honorary degrees. Dr. W. Henry, of whom mention has already been made, was given a degree in 1852 and Dr. James Douglas in 1857.

Dr. Henry, speaking of the excellent education given by the Medical Faculty of McGill, says:

> I have heard the Director-General of the Army Medical Department express his approval of the system of medical education here and say more than once, that the young men trained at the McGill College were amongst the most promising of the medical officers under his superintendence.

By 1860 the building had grown too small for the needs of the school so the governors of the university purchased it from the proprietors, Drs. Campbell, MacCulloch and Sutherland, for the amount it had originally cost the owners and enlarged it.

EDITORIAL

THOMAS SYDENHAM

THE year 1924 marks the tercentenary of the birth of Thomas Sydenham, who has been called the "English Hippocrates" because to him more than to any other man we owe the revival of the Hippocratic tradition in medicine. Born in rural Dorsetshire, of sturdy farming British stock, his life work was typical of the virtues of his class, marked by hard practical commonsense, and somewhat by lack of imagination and breadth of view. Thus he was wonderfully accurate in his clinical observations and in the deductions he drew from them, but he failed to grasp the significance of the great advances made by his contemporaries in anatomy and physiology. His student life at Oxford was interrupted by the civil wars in which he served as a captain in the cavalry of the Parliamentary army. He became a bachelor of medicine at Oxford in 1648. After some time passed in foreign travel during which he pursued his medical studies at Montpellier, he returned to England and practiced medicine. In 1663 he was admitted a member of the Royal College of Physicians. In his practice he adhered to the humoral conception of Hippocrates, that disease was due to a concoction of the humors and recovery occurred through the evacuation from the body of the *materias morbi*. He evolved a theory of the "epidemic constitution" of contagious, or what we now term infectious diseases, holding that their manifestations varied their characteristics during different appearances because of obscure influences emanating from the atmosphere and the "bowels of the earth," thus individual epidemics or endemics assumed specific characters, on one occasion affecting chiefly the respiratory organs, on another the bowels, etc. Sydenham was the first to describe the form of chorea which yet goes by his name, and he also left us classic descriptions of hysteria, gout, from which he himself suffered many years, and scarlet fever, which he clearly differentiated from measles. As a therapeutician he was much in advance of most of his contemporaries, largely because of his reliance on the *vis medicatrix natura*, like Hippocrates. In the management of scarlet fever he opposed the method in vogue of

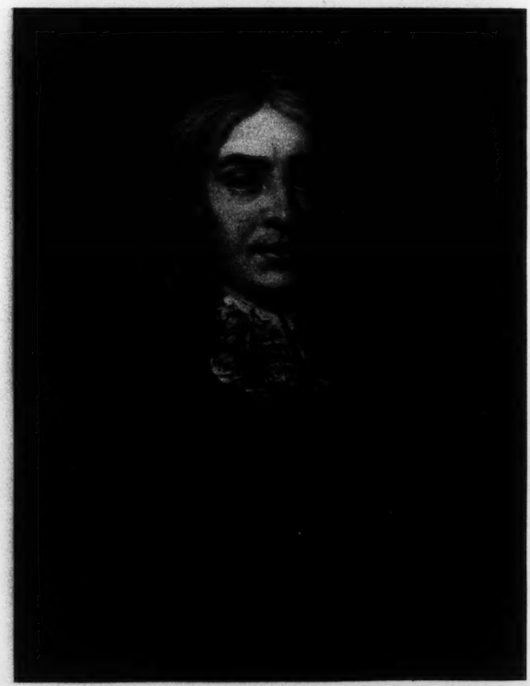

FIG. 1. THOMAS SYDENHAM
(1624–1689)

shutting up the victim in a close room, advocating instead the introduction of plenty of fresh air into the sick chamber. He was a strong believer in the virtues of cinchona and introduced into use the preparation of laudanum which bears his name. Like the rest of his fellow practitioners he used venesection in most diseases but he seems to have exercised more moderation as to the quantity of blood to be withdrawn and to have exercised more discretion in the cases to which it was applied. During the outbreak of the plague in London he unfortunately saw fit to follow the example of his great predecessor Galen under similar circumstances, and fled from the city. Although he is said to have taken this action only because of the solicitation of his friends it is hard to consider this excuse as valid. Benjamin Rush remained in Philadelphia in the midst of several terrible epidemics of yellow fever, thereby setting a notable example to the other physicians of the city.

Sydenham's practice was largely confined to the citizens of London who had sympathized with the Puritan cause. An ex-soldier of the Parliamentarian army could hardly expect to be patronized by those who came into power with the Restoration. He seems to have had but little personal contact with his great contemporaries Harvey, Mayow, etc., who were doing so much for scientific medicine in England, possibly because they were on the other side of the political fence. At his death in 1689, from his old enemy, gout, he was buried in Westminster Abbey.

[From Michaelis Ettmulleri: Opera Medicorum, Westphali, 1697]

CORRESPONDENCE

To the Editor:

The writer has for a considerable time been engaged upon an exhaustive study of the ancient Egyptian medical papyri. In the course of this investigation it has been necessary to read the works of ancient medical writers of other countries, for the Greeks, Romans, Arabs and many other peoples were largely indebted to Egypt for much of their medical knowledge. Apart from confessedly medical writers, such as Hippocrates, Dioscorides and Galen, there is much interesting information about ancient notions of disease and its cure scattered in non-medical books, and a search through the nine books of Herodotus has resulted in a large crop of interesting notes, a selection from which is now offered to the reader. To what extent the information imparted by Herodotus is to be relied on is a question which we need not now discuss; we will merely collect his statements as he made them, without comment.

In the first place it may be noted that illness or disease is nearly always attributed to divine displeasure, as we shall see again and again. Although Herodotus states[1] that the Egyptians believe that all the diseases to which they are subject are produced from the food they use, the ancient papyri give us quite a different impression. From the prevalence of the use of magic, from the spells and incantations and from other evidence, it seems quite clear that the Egyptians believed illness to be the result of possessing spirits, and the often very distasteful and repulsive ingredients used in their medicines support the view that the more unpalatable the draught the quicker the demons would quit the body of the afflicted person. It is only in the treatment of such palpable physical causes of suffering as parasitic worms or wounds inflicted by human agency, that real medical or therapeutic methods were employed by them, such as the surgical directions contained in the Edwin Smith Papyrus and in certain sections of the Ebers Papyrus. The Egyptians, however, knew the value of purgatives as the great number of purging prescriptions in the Ebers and other papyri bear witness, and Herodotus informs us[2] that they "purge themselves every month, three days successively, seeking to preserve health by emetics and clysters."

Beneath the great mass of magic which the Egyptian papyri expound, there is no doubt that the Egyptians possessed considerable acquaintance with real medical knowledge, and their physicians had a widespread reputation. Darius, when he injured his foot, immediately sent for Egyptian physicians, but on this occasion they did not come up to expectations and made the patient worse,[3] so that the case had to be taken over by the Crotonian physician, Damocedes, who applied gentler methods and effected a cure.[4] Cyrus again sent a request to Apries for the best oculist in Egypt.[5] Herodotus states[6] that all the Egyptian physicians were specialists, but from the miscellaneous contents of the medical papyri, it would seem that the doctors were general practitioners.

Damocedes, whom we have just mentioned, gained a wide reputation, and was appointed as physician by the public authorities of the Aeginetans, Athenians and others. His reputation caused the Crotonian physicians to be regarded as the best in Greece, the Cyreneans occupying second place.[7] Atossa, wife of Cyrus, had a tumor on the breast. From motives of modesty she concealed the fact, but when it burst and the affection became serious, she sent for Damocedes, who undertook to cure it if she would implicitly obey his instructions. The happy result was attained, but how, we are unfortunately not told.[8] In contrast to the peoples who had skilled medical aid at their command, the Babylonians are stated to have had no doctors,[9] but to have brought their sick into the market place in order to discover from passers-by, who may have been similarly affected, what course of treatment to adopt.[10] The Indians likewise, we are told,[11] when sick go to a solitary place to die, without being tended in any way. Other Indian tribes, the Padaeans, who eat human flesh, kill their sick in order that their flesh may not become tainted by disease and unfit for food.[12] The Massagetae, although they follow the same brutal custom of cannibalism, do not eat the flesh of those who die of disease.[13] Similar customs are attributed to the Issedones.[14]

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[1] II, 77.

[2] *Loc. cit.*

[3] III, 129.

[4] III, 131.

[5] III, 1.

[6] II, 84.

[7] III, 131.

Epidemics and plagues were a sure sign of divine displeasure, or were a warning of worse calamities to come. Thus, of a hundred youths sent by the Chians to Delphi, only two returned, the rest dying of plague.[15] The vengeance of the gods depopulated Crete by sending pestilence to man and beast.[16] The hapless army of Xerxes when on the march was decimated by pestilence and dysentery.[17] The Scythians pillaged the shrine at Ascalon, and the outraged deity in revenge smote the Scythians and all their posterity with a female disease (θήλεαν νουσον), "so that the Scythians confess that they are afflicted with it on this account and those who visit Scythia may see in what a state they are whom the Scythians call Enares" (ἐνάρης).[18]

Pharnuches met with an accident at Sardis. His horse, being startled by a dog, suddenly reared and threw him. He vomited blood and the disease developed into consumption (φθισις). The horse was punished by having its legs cut off at the knees;[19] in this case the horse was evidently looked upon as responsible for the disease instead of its being attributed to the displeasure of the gods.

The Persians appear to have had some medical skill. During a naval battle, an enemy, named Pytheas, who was a marine, fought with great bravery, and was so severely wounded that he was almost cut to pieces. "But when having fallen, he was not dead but still breathed, the Persians, who served on the ships were very anxious to keep him alive on account of his valour, and they healed his wounds with myrrh, binding them with strips of flaxen cloth." They treated him with honor, the other prisoners being treated as slaves.[20] The Persians again isolated all persons suffering from leprosy and scrofula (λέπρη and λεῦκη). They were not permitted to remain in towns nor to have any contact with their fellow men. They likewise drove away white doves, believing them to be similarly afflicted.[21]

Some interesting physiological ideas occur in Herodotus. Thus he believes the inhabitants of the Nile Valley become dark from exposure to excessive heat.[22] The semen of certain Indian tribes is not white, like that of other men, but black as is the case with the Ethiopians.[23] A remarkable race living in a remote and mountainous tract of the land of the Scythians is bald from birth and grows no hair. They eat fruit, cultivate no arts and have no weapons.[24]

Several cases of mental disorders are to be found. Cambyses suffered from infancy from "the sacred disease" (epilepsy); "in that case it was not at all surprising that when his body was so diseased, his mind should not be sound."[25] Charilaus, brother of the tyrant Maeandrius, was somewhat out of his mind and confined in a dungeon.[26] The crew of a trireme was seized with madness as a vengeance of the god for the desecration of his statues.[27] Xerxes' army was seized with panic in the night owing to shortage of water on the march for Sardis, the river having run dry.[28] Cleomenes was of unsound mind, being almost mad.[29] On one occasion it is said that "madness seized upon him, though he was before somewhat crazed."[30] Perhaps his was a case, not of madness, but of delirium tremens, for elsewhere[31] his madness is attributed to his habit of drinking unmixed wine, a custom he copied from the Scythians.

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[8] III, 133.

[9] I, 197.

[10] This of course was not really the case. A large mass of cuneiform medical texts exists. These have recently been collected and published by Mr. R. Campbell Thompson.

[11] III, 100.

[12] III, 99.

[13] I, 216.

[14] IV, 26.

[15] VI, 27.

[16] VII, 171.

[17] VIII, 115.

[18] I, 105, cf. IV, 67.

[19] VII, 88.

[20] VII, 181.

[21] I, 138.

[22] II, 22.

[23] III, 101.

[24] IV, 23.

A curious instance of therapeutic treatment is described by Herodotus as being practiced by the nomadic Libyans.

> When their children are four years old, they burn the veins on the crown of their heads with uncleaned sheep's wool; and some of them do it on the veins of the temples; to the end that humours flowing down from the head may not injure them as long as they live: and, for this reason they say they are so very healthy, for the Libyans are in truth the most healthy of all men with whom we are acquainted; whether from this cause I am unable to say with certainty:[32] . . . But if convulsions (σπασμὸς) seize the children when they are burning them, they have discovered a remedy; by sprinkling them with the urine of a he-goat they restore them. I repeat what the Libyans themselves say.[33]

Two cases of blindness may be mentioned. The first was the result of a vision. An Athenian named Epizelus, fighting at Marathon, suddenly became blind, although he received no injury and was not wounded. He remained blind all the rest of his life. He stated that he had a vision of a heavily-armed, long-bearded man who stood before him, then passed him by, but attacked the man next to him.[34] The other case was a divine punishment. Pheron, son of Lesostris, was in a boat during the inundation, when a high wind arose and lashed the water into a storm. The king arrogantly flung his dagger into the river, an insult to the Nile god, which was immediately punished by pain in the eyes and blindness. For ten years the king remained sightless, but on the eleventh, a message came from the oracle of Buto that the term of his punishment had expired, and that he should recover his sight by washing his eyes with the urine of a woman who had had intercourse with no other man than her own husband. He made trial, first of his own wife, which failing, he tried others until he was successful. Having recovered his sight he had all the women who had failed to pass the test collected together and burnt, and married the woman through whom he had regained his vision. He dedicated offerings to the gods and erected two obelisks in gratitude for his recovery.[35]

Croesus had a son who was dumb, and after all remedies had been tried in vain an appeal was made to the Delphic oracle. The reply was to the effect that it would be an evil day upon which his son should first speak. He did so at a time when a Persian was advancing to kill his father, who, however, owing to his misfortunes, was not loath to die; the son thus saved the life of his parent who was, however, later captured.[36] A certain Battus consulted the oracle about an impediment in his speech, but he received an enigmatic reply.[37] The oracle was again consulted, when the Carians, in their attempt to dig through an isthmus to make an island, suffered severe injuries to their eyes and bodies through the stone they were cutting. The oracle replied that if it had been Zeus' wish that the land should be an island, he would have so made it. They therefore abandoned the undertaking and were captured.[38]

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[25] III, 33.

[26] III, 45.

[27] V, 85.

[28] VII, 43.

[29] V, 42.

[30] VI, 75.

[31] VI, 84.

[32] Cf. II, 77. "The Egyptians, next to the Libyans, are the most healthy people in the world."

[33] IV, 187.

[34] VI, 117.

[35] II, 111.

[36] I, 85.

[37] IV, 155.

A dire condition afflicted Pheretime whose life closed in wretchedness. As a vengeance from the gods for her cruel career her body, even when alive, swarmed with maggots.[39]

A curious ignorance of the period of gestation is revealed by Ariston when the birth of his son is announced before ten months had expired, and the father, reckoning the period on his fingers, refused to believe his own paternity. The child's mother afterwards informs her son that she had intercourse with a specter on the same night as with her husband and that she then conceived. When Ariston doubted the matter owing to the period being less than ten months, he was ignorant, she said, that women frequently bore children at seven or nine months, and that this, her son, was a seven months' child.[40]

Of anatomy we find practically nothing in Herodotus, other than what is contained in his well-known description of the Egyptian methods of embalming.[41] Mention is made of opening the body of a boy whom Cambyses had killed with an arrow, in order to ascertain to what part of the body the weapon had penetrated. The arrow was found to be in the heart.[42] Mention is also made of the discovery of a skull without sutures, consisting of a single piece of bone, and of a jaw in which the teeth had all coalesced into a single bone, both the front teeth and the molars.[43]

Finally reference may be made to a remarkable case of an operation performed by a man upon himself. Hegesistratus, an Elean, was taken by the Spartans, bound and condemned to death. In peril for his life and to avoid torture, he got a knife and cut away the broad part of his foot in order to free it from the iron shackle in which his foot was confined. He then dug a hole through the wall of the building, thus eluding the sentinels, and effected his escape, traveling by night and hiding by day. His captors later found that he had flown leaving half his foot on the floor of the chamber.

Warren R. Dawson, F.R.S.
London, England.

*To the Editor:**

During the sixteenth, seventeenth and eighteenth centuries, the printing press produced countless medical tracts and pamphlets by members of the medical profession written for the purpose of personal aggrandizement or directed against the character, professional attainments or private life of their adversaries. Medical charlatans distributed pamphlets freely to the public, in which were set forth their treatments and marvelous cures, while laymen, in the form of amateur medical men, delighted in prescribing treatment and cures for disease for their fellows.

The little tract to which I desire to call your attention belongs to the latter class and the only excuse I can offer in referring to it today is its quaintness and apparent rarity. It bears the following title: "The Dukes Desk newly Broken up wherein is discovered divers Rare Receits of Physick and Surgery, good for Men, Women and Children. Together with several Medicines, to Prevent and Cure the most Pestilent Diseases in any Cattel. By William Lovell, Gentleman and Traveller. London, 1660, Printed for the Author."

The first remedy contained in its fourteen pages is one against the plague, sent to the Lord Mayor of London by King Henry VIII.

> Take a handfull of Sage, a handfull of Herbgrace, a handfull of Elder leaves, a handfull of red Bramble leaves, stamp them all and strain them through a fine cloth with a quart of white Wine, and then take a quantity of Ginger, and

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[38] I, 174. [39] IV, 205. [40] VI, 63, 69.

[41] II, 85 ff. Embalming in other countries is referred to in I, 40; III, 24; IV, 71, etc.

[42] III, 35. [43] IX, 83.

* Read before the Section of the History of Medicine of the Royal Society of Medicine, London, May 21, 1924.

> mingle them together, and so take a spoonfull of the same, and you shall be safe for twenty-four dayes, nine times taking of it is sufficient for a whole year, by the grace of God, and if it be so that the party be stricken with the Plague before he hath drunk this medicine, then take the water of Scabios a spoonfull, of water of Bettony a spoonfull, and a quantity of fine Triacle: and put them all together and cause him to drink it, and it will expell all the venome. If the botch appear, then take the leaves of Brambles, Elder leaves, mustard seed, and stamp them together, and make a Plaister thereof, and lay it to the sore, and that shall draw out the venome, and the party shall be whole by the grace of God.

It will be noted that betony enters into the composition of the potion given above. This plant enjoyed a great reputation from the time of Pliny the Elder down to modern times. It was prescribed for a great number of affections and was noted for digesting crude humors, stimulating the digestion and absorbing the fumes of wine when they rose to the brain. It also was supposed to possess the virtue of improving the sight, and it is well known that when growing around a house this herb enjoyed the prerogative of placing the structure under the protection of the gods.

The second prescription given by Mr. Lovell is "a medicine that was taught King Henry the Seventh by his Physitian against the Pestilence":

> Take of Rue, Mandragories, Featherfew, Sorrell, Burnet, of each half a handful, of crops and roots of Dragons, a like quantity: Wash them clean, and seeth them with a soft fire in running water, from a pottle to a quart, and then strain them together through a clean cloth, and if it be bitter, put thereto a quantity of sugar-candy, or other sugar; and if this medicine be used before the Purples do arise, ye shall be whole by God's grace.

On page three of the tract, one finds "Mr. Baker's medicine for the Cough of the Lungs."

> Take three pints of running water, half a pound of *Portugal* Sugar, with wine figs, and half a spoonfull of Annise seeds bruised, a handfull of raisons of the Sun clean washt and stoned, a penny-worth of Maiden-hair; let all these boil together, untill the one half or more be boiled away, then strain them through a fine cloth, and every morning drink two spoonfuls of it luke warm and you shall find present remedy. *Probatum.*

On page four is a remedy "to cleanse the Stomach and make sweet the Breath."

> Take Rosemary and boil it in White Wine and drink thereof three mornings fasting, it helpeth Forgetfulnesse and profiteth the Wit.

The flowers, leaves and calyces of rosemary were the principal ingredients of the famous "Hungary Water"; in French, *Eau de la Reine d'Hongarie.* This water enjoyed a considerable vogue; Madame de Sévigne speaks of taking it. Even Boerhaave regarded rosemary as the superlative remedy for epilepsy, and also for suppressed menstruation. Mr. Lovell also recommends this plant for worms, boils and toothache. He states that if there are any worms in the teeth "they shall die and it (burnt rosemary leaves) shall keep the teeth from all pain."

Lovell also recommends isinglass boiled in broth "to stay the Flux." I assume that he refers to diarrhea, but I may add that the London Medical Dictionary (1809) states that "isinglass dissolved in milk is useful in fluor albus taken internally."

I will conclude these few extracts from "The Dukes Desk," by quoting the treatment given "for the Stone Colick":

> Take a Head of Garlic, roast it in the Embers, clean it and beat it in a dish with a rouling Pin, put thereto a good quantity of Pepper, then take of unsalted Butter clean washed, as much as both Garlick and Pepper, mix them well together, and make pills thereof as big as may conveniently be swallowed, roul them in Nutmeg and Sugar, then take one, if that ease not, take a second, at most but a third, fasting half an hour after, then take a toast and butter it well on both sides with the fresh butter, put it into a pint of strongest Ale you can get, being soaked, eat the toast, then drink the Ale, and by the help of God it shall cure young and old.

I would venture one comment. Garlic is unquestionably coming into favor in medical practice on the Continent as an excellent drug for pulmonary gangrene and as a powerful hypotensive medicament in cases of high arterial blood-pressure. Is it possible that this humble bulb may have a relaxing action upon ureteral spasm due to the passage of a renal calculus? And has this Gentleman and Traveller of the seventeenth century given us still another therapeutical indication for the use of garlic?

Charles Greene Cumston, M.D.
Geneva, Switzerland.

HISTORICAL NOTES

PETRUS HISPANUS

Walter Wilke in his Leipsic, 1924, inaugural dissertation discusses the importance of the physician, Petrus Hispanus, for dentistry. This well-known physician, the only medical man to fill the papal chair, was born in Lisbon about 1226 and studied at Montpellier and Paris, as there was no university at that time in his native land. For seven years he practiced medicine in Siena, where he studied leprosy and wrote commentaries on Hippocrates and Galen. He also, as was customary, studied philosophy (*Summulae Logicales*) and theology, with the successful result that he was crowned with the tiara in August, 1276. Unfortunately, he was killed eight months later by the falling of the roof of his study in the papal palace at Viterbo.

His chief medical work was the "Thesaurus Pauperum," one of the most used medical books of the Middle Ages. It was printed first at Antwerp in 1476 and again in 1486, 1497 and frequently in the sixteenth century. It was translated into Italian, English and German. The chapter, "De dolor dentium," contains a long list of remedies against toothache, many of which are based on the usual medieval superstition. An interesting item is the reference to St. Apollonia, who is here for the first time mentioned as the "tooth saint."

GALEN'S "TECHNE"

The medieval and early modern commentaries on Galen's "Techne" form the subject of Justus Niedling's Leipsic, 1924, dissertation, based on work done in Sudhoff's Institute. Of the various books by this prolific writer, whose teachings dominated medical thought for almost 1500 years, his "Microtechne," or "Ars Parva," was probably the best known. Written about 193 A.D., it gives in condensed form his conception of the medical art. With other Greek masterpieces, it was turned over to Haroun-al-Rashid by the emperor Nicephorus as one of the conditions of his surrender, and translated into Arabic by the Christian, Hunain ibn Ischag (Johannitius Isagoge), the most celebrated of the Arabic translators. Like many other ancient masterpieces, it was lost to the western world until reintroduced again from the Arabic by Constantine the African. Appearing in Latin as "Ars Medicinae," together with the "Aphorisms," of Hippocrates and various commentaries on these works, it occupied the chief place in the curriculum of the schools of Paris, Montpellier, Bologna, Padua and Cologne. The author gives details of fifty-three named and thirty anonymous commentaries of this work.

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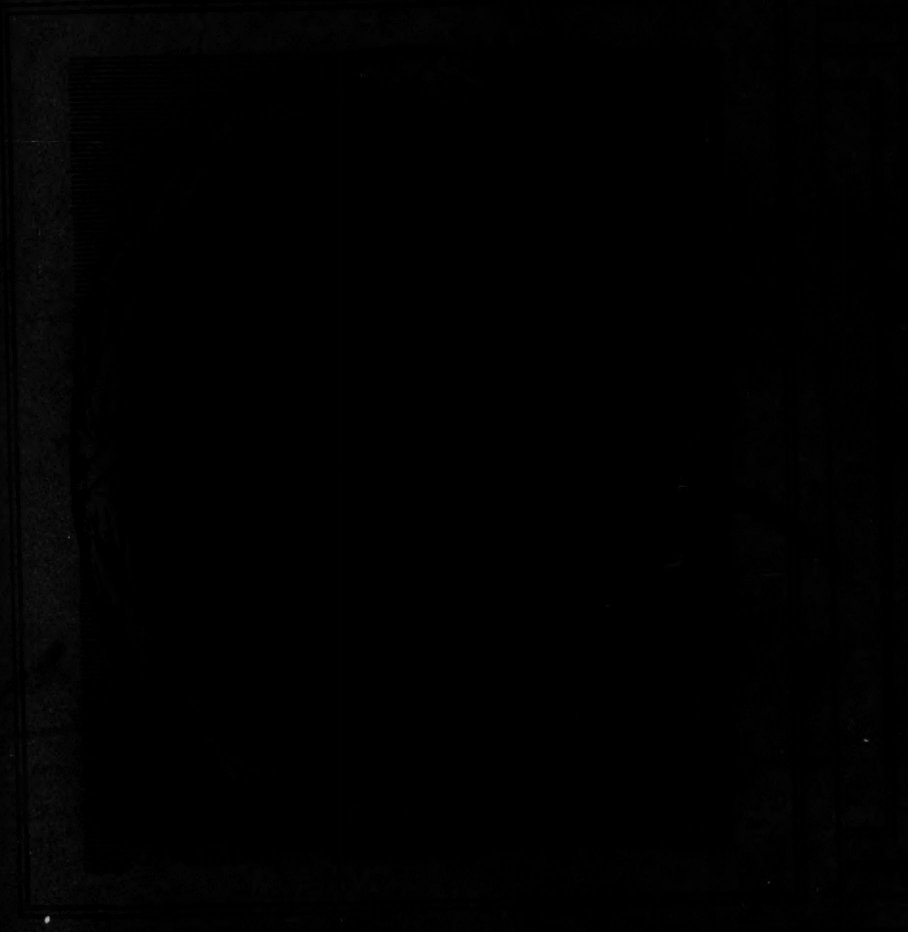

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ANNALS OF MEDICAL HISTOR

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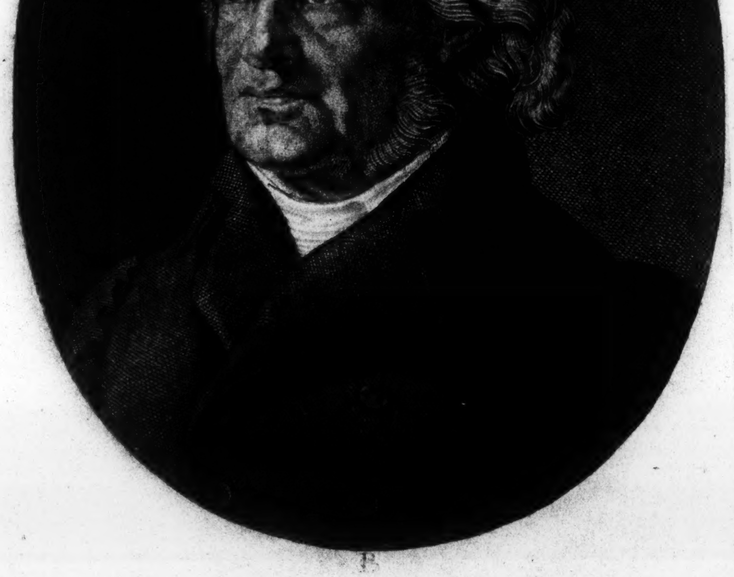

SAMUEL THOMAS VON SÖMMERRING

[1755-1830]

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